VOL. XXXIX. No. 11 NOVEMBER 1954

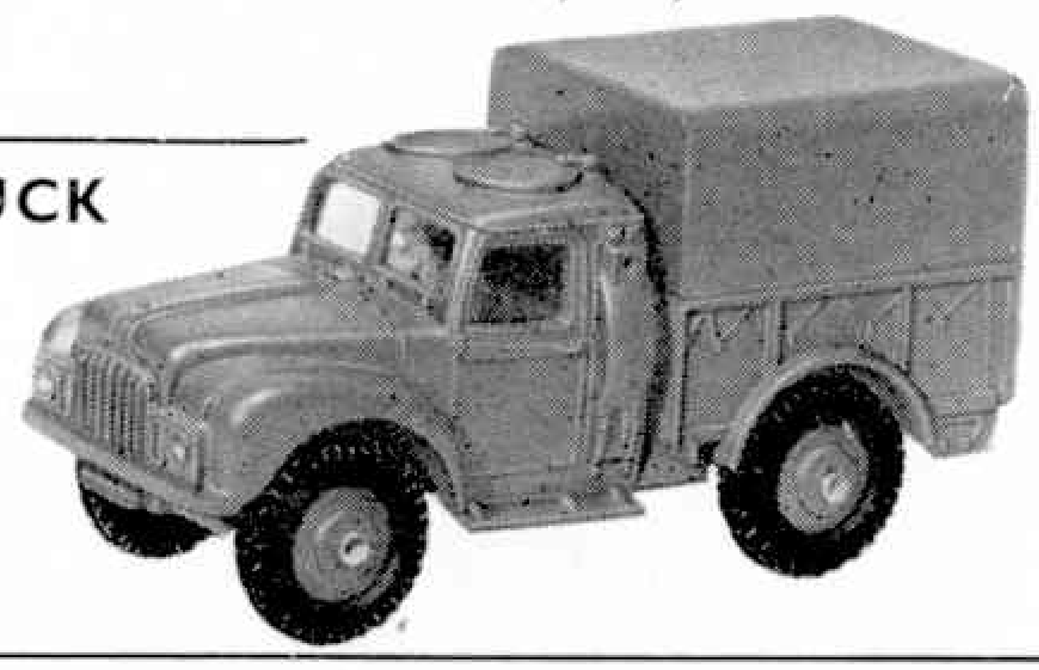
MECCANO MAGAZINE

A LONDON DOCKS SCENE

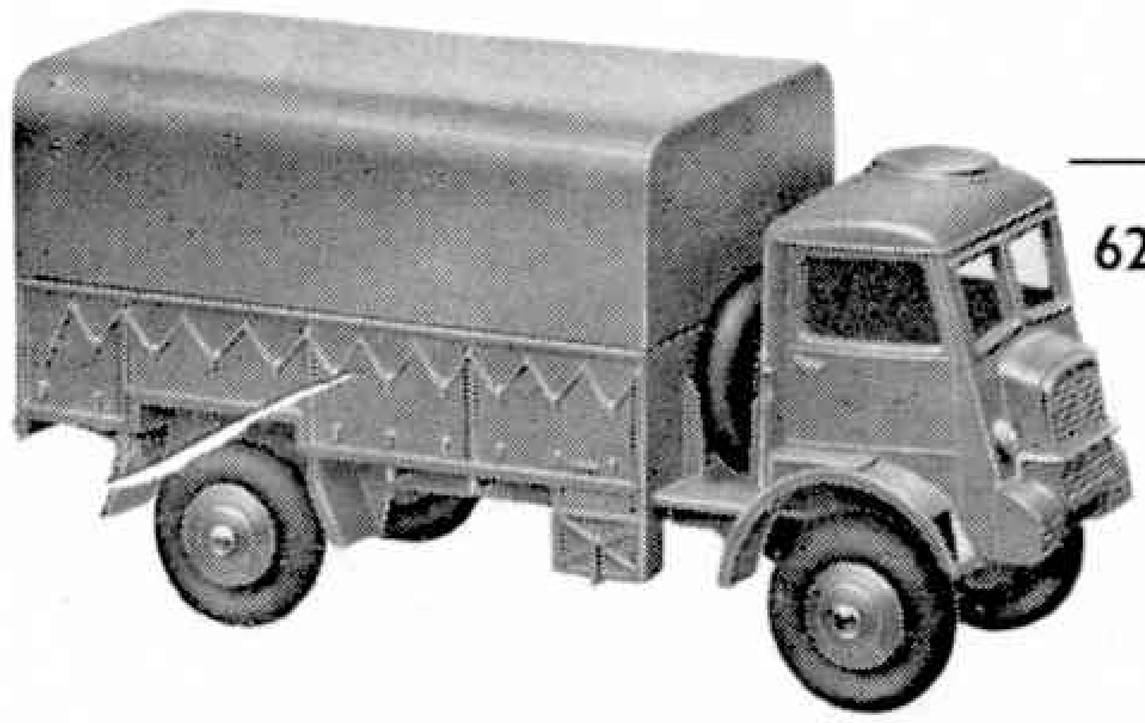
1/-

Reinforcements

Are all these splendid models of military vehicles in your collection? They are true-to-type, finely detailed, and are among the most popular of all Dinky Toys.



641 ARMY 1-TON CARGO TRUCK
with Driver
Length $3\frac{1}{8}$ in. **3/9**



623 ARMY COVERED WAGON
Length $3\frac{7}{8}$ in. **3/7**

673 SCOUT CAR
Length $2\frac{5}{8}$ in. **2/11**

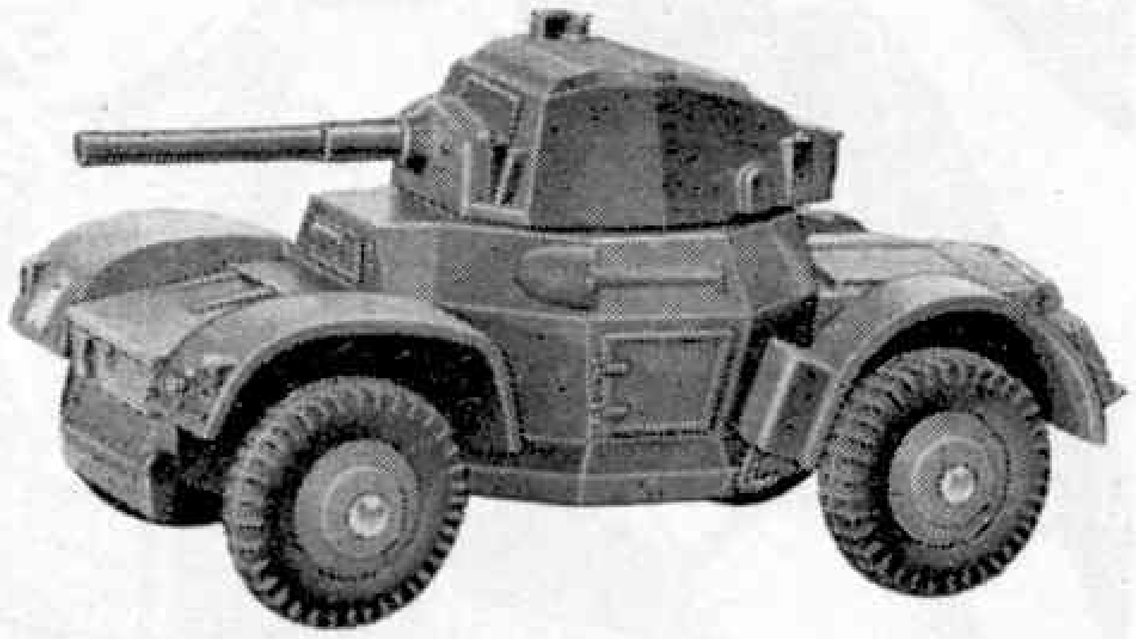
651 CENTURION TANK
Gun Turret rotates in full circle. Rubber tracks.
Length 5 in. **7/11**

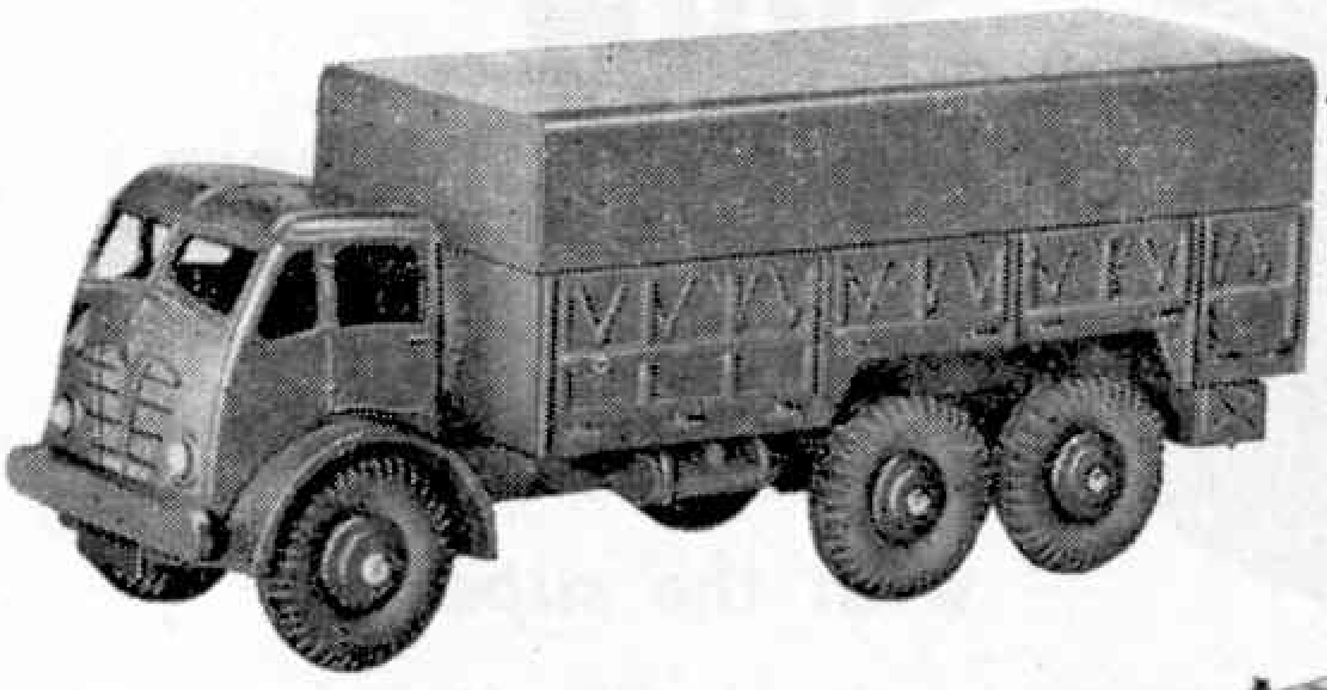
DINKY TOYS
TRADE MARK REGD.

for your playroom army!

Ask your dealer for a copy of the new Dinky Toys booklet, which illustrates the full range of Dinky Toys in colour—or write direct to Meccano Ltd.

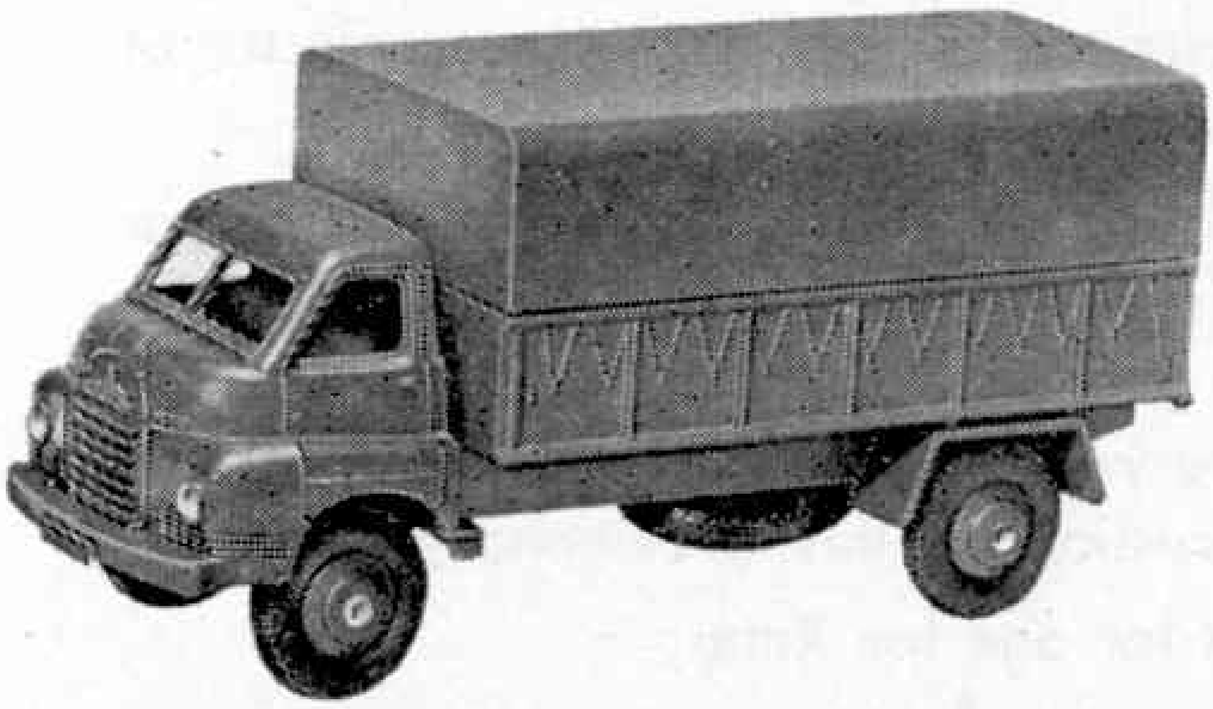
670 ARMOURED CAR
Length $2\frac{3}{4}$ in. **3/7**





622 10-TON ARMY TRUCK
with Driver
Length $5\frac{1}{8}$ in. .. **6/9**

674 AUSTIN 'CHAMP' ARMY VEHICLE with Driver
Length $2\frac{3}{4}$ in. **3/6**



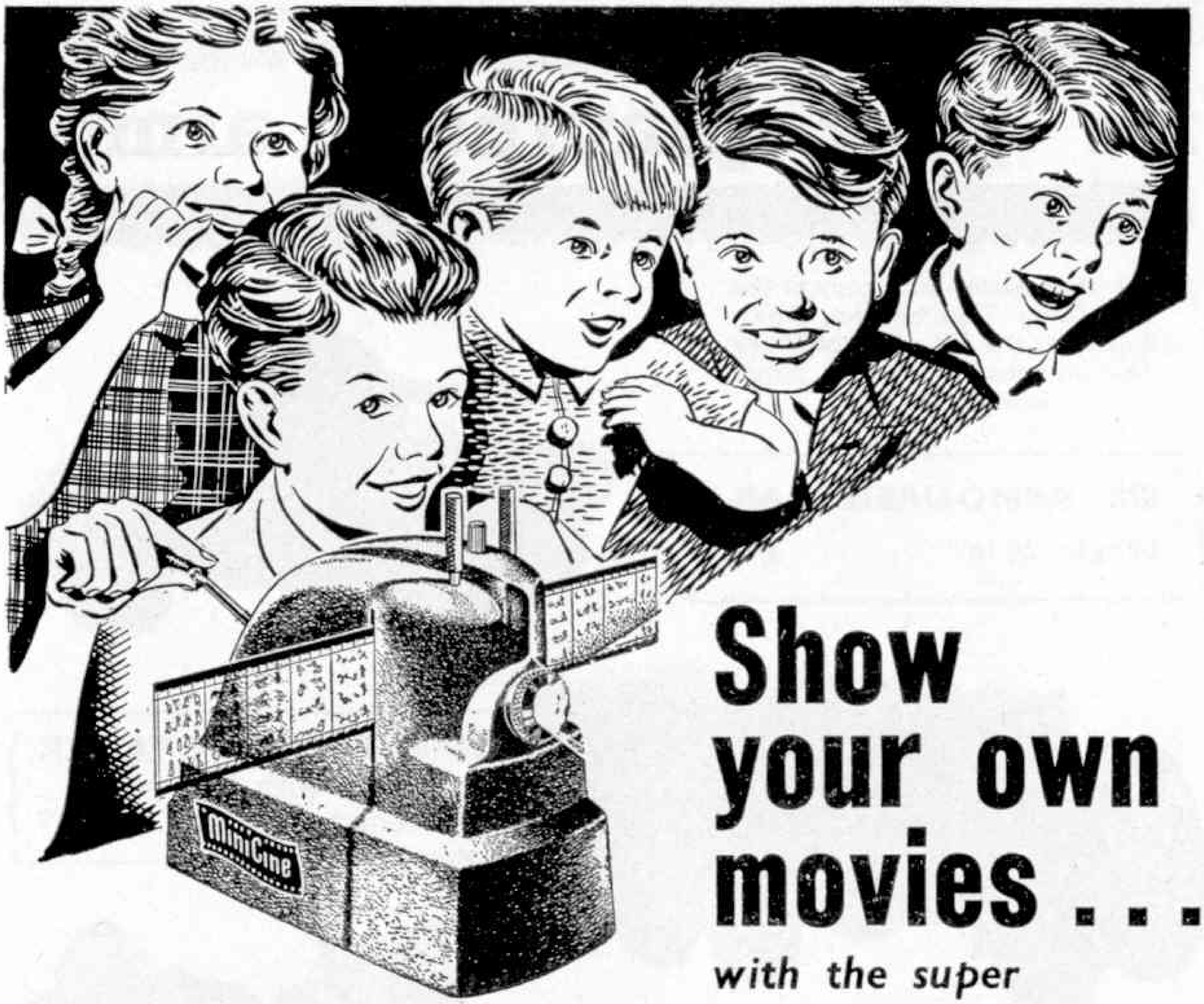
621 3-TON ARMY WAGON
with Driver
Length $4\frac{3}{8}$ in. **5/3**

All prices include Purchase Tax.

Made in England by Meccano Ltd.
Binns Road, Liverpool 13

DINKY TOYS

TRADE MARK REGD



Show your own movies . . .

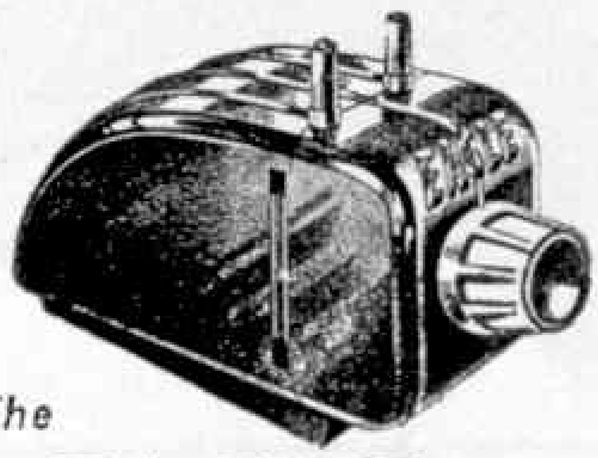
with the super

Mini Cine!

Think of the fun you will have planning a a movie show and working a projector of your very own.

You can choose from hundreds of colour films costing as little as 1/11d. each, which will thrill you and your friends. You will have years of pleasure, entertainment and instruction with this revolutionary instrument.

Ask for one for Xmas.



The

EAGLE *PROJECTOR*

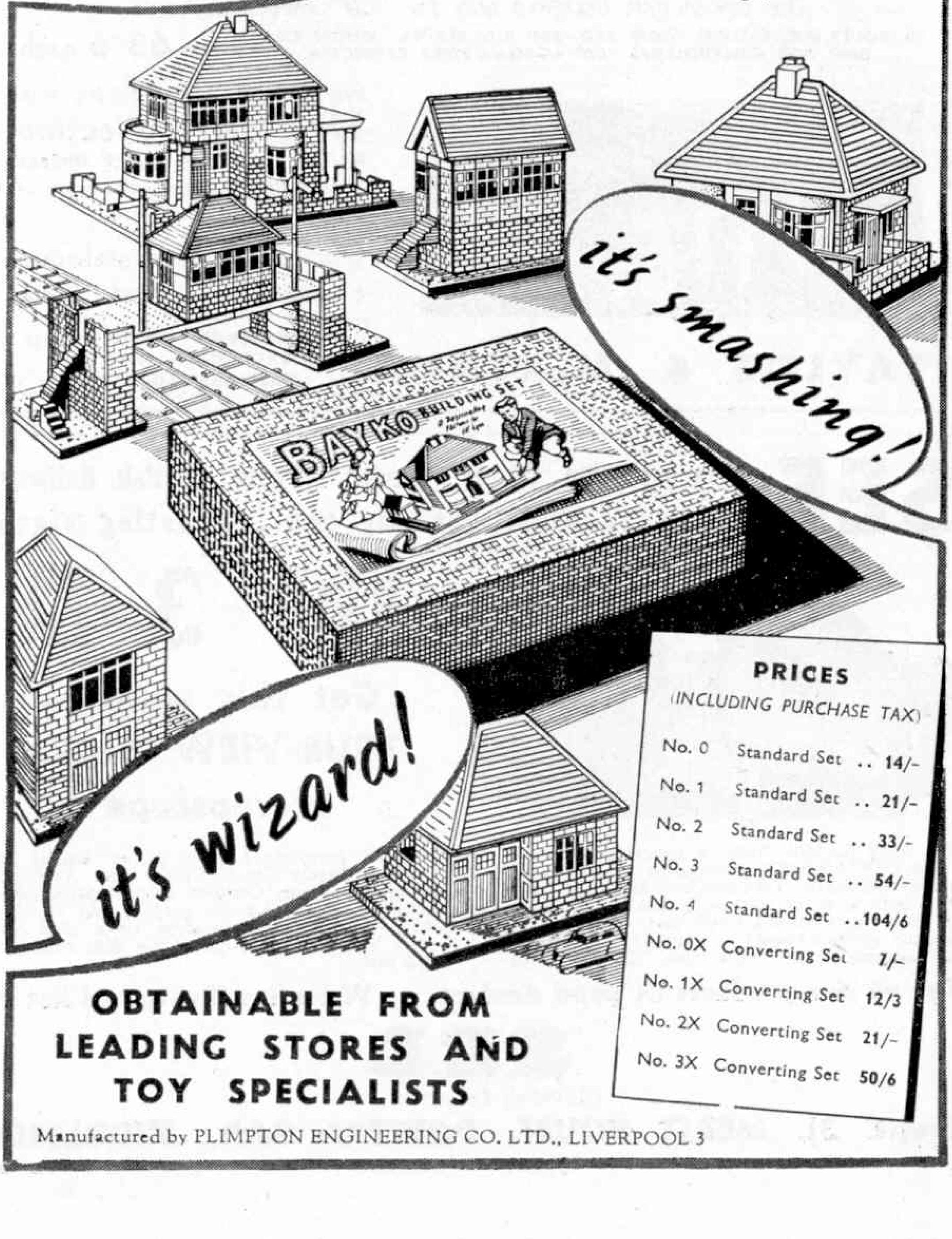
This handy still projector shows over 200 films featuring your favourite characters. It projects clear and bright pictures in full colour.

FREE! *Send for free illustrated brochure giving full details.*

MARTIN LUCAS LTD. (Dept. M), HOLLINWOOD, LANCS.

Oh Boy BAYKO!

Bayko builds scores of beautiful models, including Railway Stations, Signal Boxes, Bridges, Houses, Public Buildings, etc.



PRICES
(INCLUDING PURCHASE TAX)

No. 0	Standard Set	.. 14/-
No. 1	Standard Set	.. 21/-
No. 2	Standard Set	.. 33/-
No. 3	Standard Set	.. 54/-
No. 4	Standard Set	..104/6
No. 0X	Converting Set	1/-
No. 1X	Converting Set	12/3
No. 2X	Converting Set	21/-
No. 3X	Converting Set	50/6

OBTAINABLE FROM LEADING STORES AND TOY SPECIALISTS

Manufactured by PLIMPTON ENGINEERING CO. LTD., LIVERPOOL 3

HUB MODEL RAILWAYS OF THE WORLD

REGD. TRADE MARK

GREAT NEWS

For 12 volts D.C. "00" Fans

KIRDON TANDEM WAVE

The power unit designed only for "00" Model Railways

12 VOLTS D.C. OUTPUT FROM 230-250 A.C. MAINS. SINGLE CAB UNIT FOR CONTROLLING "00" LOCOMOTIVES PERFECTLY.

Price **63'6** each

WE ARE THE U.K. AGENTS FOR

The Faller Collection

OF "00" AND "HO" SCALE MODELS

These superior accessories must be seen to be believed!

Our Gigantic Catalogue costs 2/6 post free

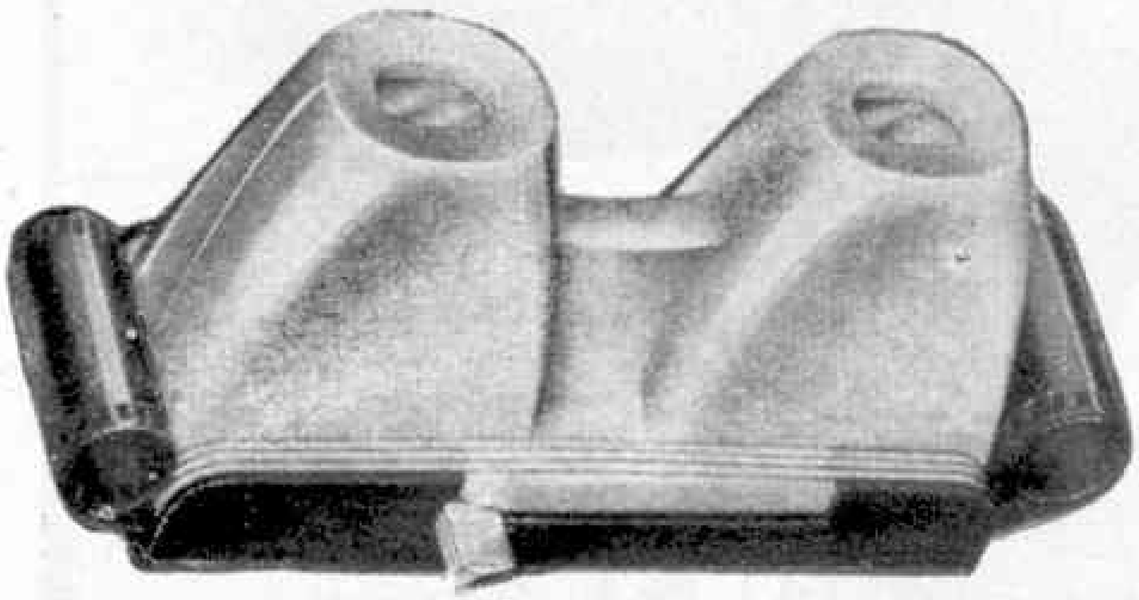
from . . .

98 CRAVEN PARK ROAD
HARLESDEN, N.W.10
Telephone ELG. 3573

TAYLOR & McKENNA

SEE

Bertram Mills Circus, London Airport, British Railways and many other exciting and interesting places



IN 3-D

Get this amazing 'TRUE-VIEW' Pocket Stereoscope!

You really do look "into" a picture used in the "True-View" Stereoscope, because it has astonishing realism and depth. Take one look and you'll want the whole series of fascinating film strips, which are easily inserted and which each consist of 14 separate scenes changed by means of the special self-aligning lever. There are 32 film strips available including London Scenes, English and Scottish Beauty Spots, South Bank Exhibition, Battersea Pleasure Gardens, Bertram Mills Circus, British Railways, London Airport, and The Zoo. The "True-View" Stereoscope costs 18/6 complete with two film strips. Extra film strips cost 2/6 each.

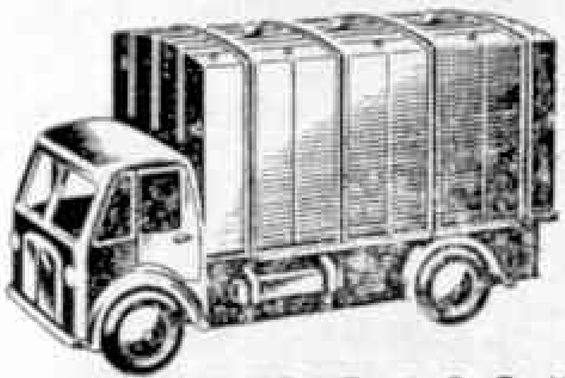
See all our products at good dealers. Write for illustrated list to

S.E.L.

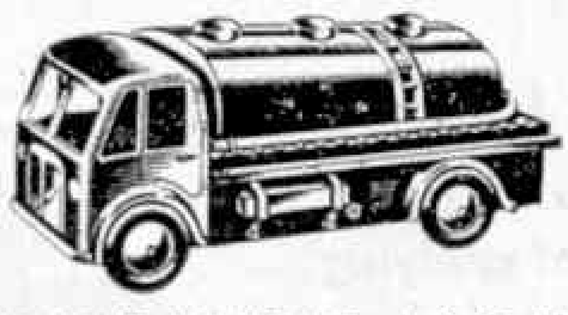
(Signalling Equipment Ltd)

(Dept. 3), MERIT HOUSE, POTTERS BAR, MIDDLESEX

YOUR TRANSPORT FLEET— —IN SCALE WITH 00 GAUGE



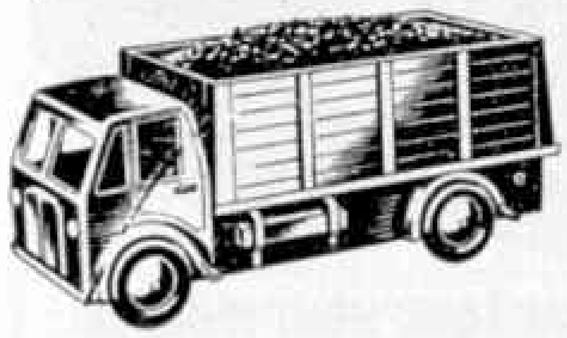
TRI-ANG MINIC "Push & Go"
000 Container Lorry.
Length 3⅛ in. PRICE **2**/-



TRI-ANG MINIC "Push & Go"
000 Petrol Tanker.
Length 3⅛ in. PRICE **2**/-

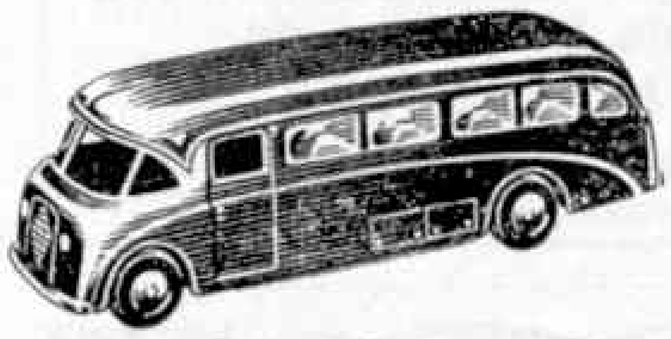
All these MINIC models are correctly scaled to suit your 00 gauge railway layout. The range covers everything from buses to fire-engines—with every model beautifully made in plastic and fitted with one of the famous "Push and Go" power units.

Start your fleet today — these MINIC models are too good to miss!



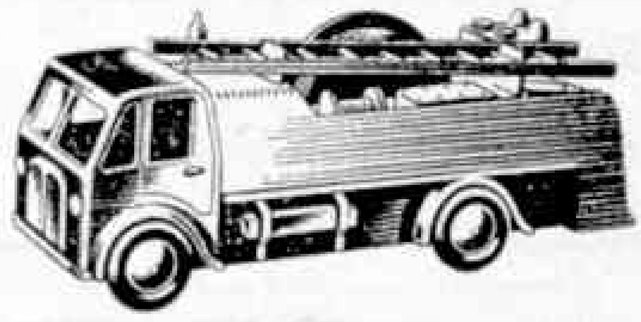
TRI-ANG MINIC "Push & Go"
000 Coal Lorry. Length 3⅛ in.
PRICE **2**/-

TRI-ANG MINIC "Push & Go"
000 Dust Cart. Length 3⅜ in.
PRICE **2**/-

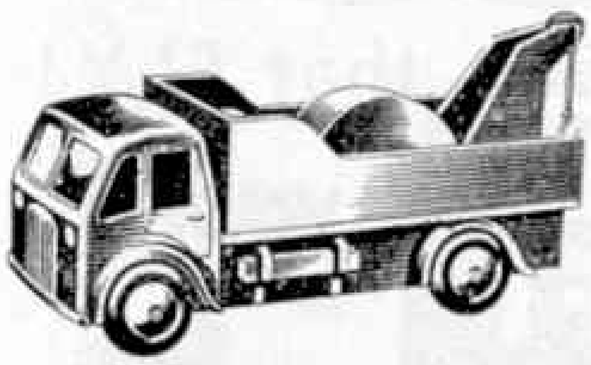


TRI-ANG MINIC "Push & Go"
000 Coach. Length 4⅛ in.
PRICE **2/6**

TRI-ANG MINIC "Push & Go"
000 A.A. Gun. Length 3⅛ in.
PRICE **2/6**

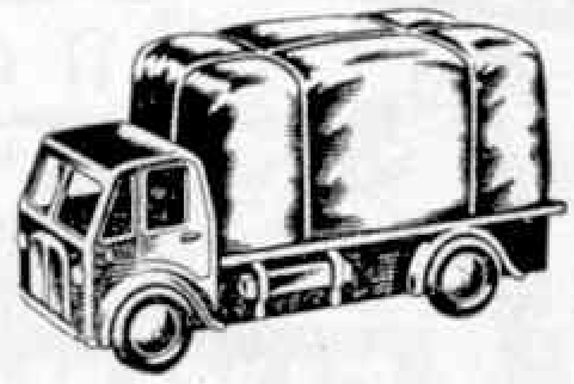


TRI-ANG MINIC "Push & Go"
000 Fire Engine. Length 3¾ in.
PRICE **2/6**



TRI-ANG MINIC "Push & Go"
000 Breakdown Lorry.
Length 3¾ in. PRICE **2/6**

TRI-ANG MINIC "Push & Go"
000 Double Deck Bus.
Length 4⅛ in. PRICE **3**/-



TRI-ANG MINIC "Push & Go"
000 Tarpaulin Lorry.
Length 3⅛ in. PRICE **2**/-

OBTAINABLE FROM YOUR LOCAL TOY SHOP WE DO NOT SUPPLY DIRECT

Tri-ang
Regd. Trade Mark

MINIC
Regd. Trade Mark

PUSH and GO

SCALE MODELS

PRODUCTS OF THE LINES BROS GROUP OF COMPANIES

NEW! EXPERIMENTAL KITS

LEARN THE PRACTICAL WAY

Here is home study of the most effective kind under expert tutors. There is no better way of studying for an examination for a career in industry or starting a new hobby. Our Practical courses comprise the most modern methods of postal tuition, combined with a practical kit (which remains your property).

COURSES FROM 15/- A MONTH

POST THIS COUPON TODAY

E.M.I. INSTITUTES, Dept. 197X, Grove Park Road, London, W.4. Please send me your free book.

Subject(s) of Interest .....

NAME .....

ADDRESS .....

ICS1A..... NOV.

COURSES WITH PRACTICAL EQUIPMENT INCLUDE: Radio, Television, Mechanics, Electricity, Chemistry, Photography, Carpentry; also Draughtsmanship, Commercial Art, Amateur S.W. Radio, Languages, etc.

E.M.I. INSTITUTES

The only Postal College which is part of a world-wide Industrial Organisation.

NEW! THRILLING! FASCINATING!

11 Grand PRESS-OUT Models that FLY!

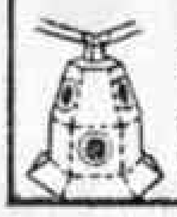
SPACESHIP ROCKET JET & AIRCRAFT FLYING MODELS BOOK

YOURS FOR ONLY 8/6 incl. Postage etc.

Real SCALE MODELS—see them FLY!

Also included:—High-Speed Gravity-Powered Pylon. Twelve three-dimensional models in full colour, with all parts pre-cut, pre-creased, ready to press out of the book and assemble! 9 accurate scale models (Scale 1/8 in. to 1 ft.) of the latest British aircraft, and two outstanding imaginative models—a Rocket Jet and a Spaceship. An extra sturdy model—the NEW GRAVITY PYLON, with revolving arm, powered on an exciting gravity principle, enables models to be flown without fear of damage. Amazing low price, ONLY 8/6.

Make MODELS of Vampire, Viscount, Meteor, Canberra, Javelin, Swift, Hunter, Comet, Avro·Vulcan, Rocket, and Spaceship, and POWER PYLON around which the models fly.



SEND NO MONEY NOW!

WITHOUT OBLIGATION reserve me "Spaceship Rocket Jet and Aircraft Flying Models Book" and send special Invoice with 100% Guarantee-Full Satisfaction or No Charge.

BLOCK LETTERS

..... NAME

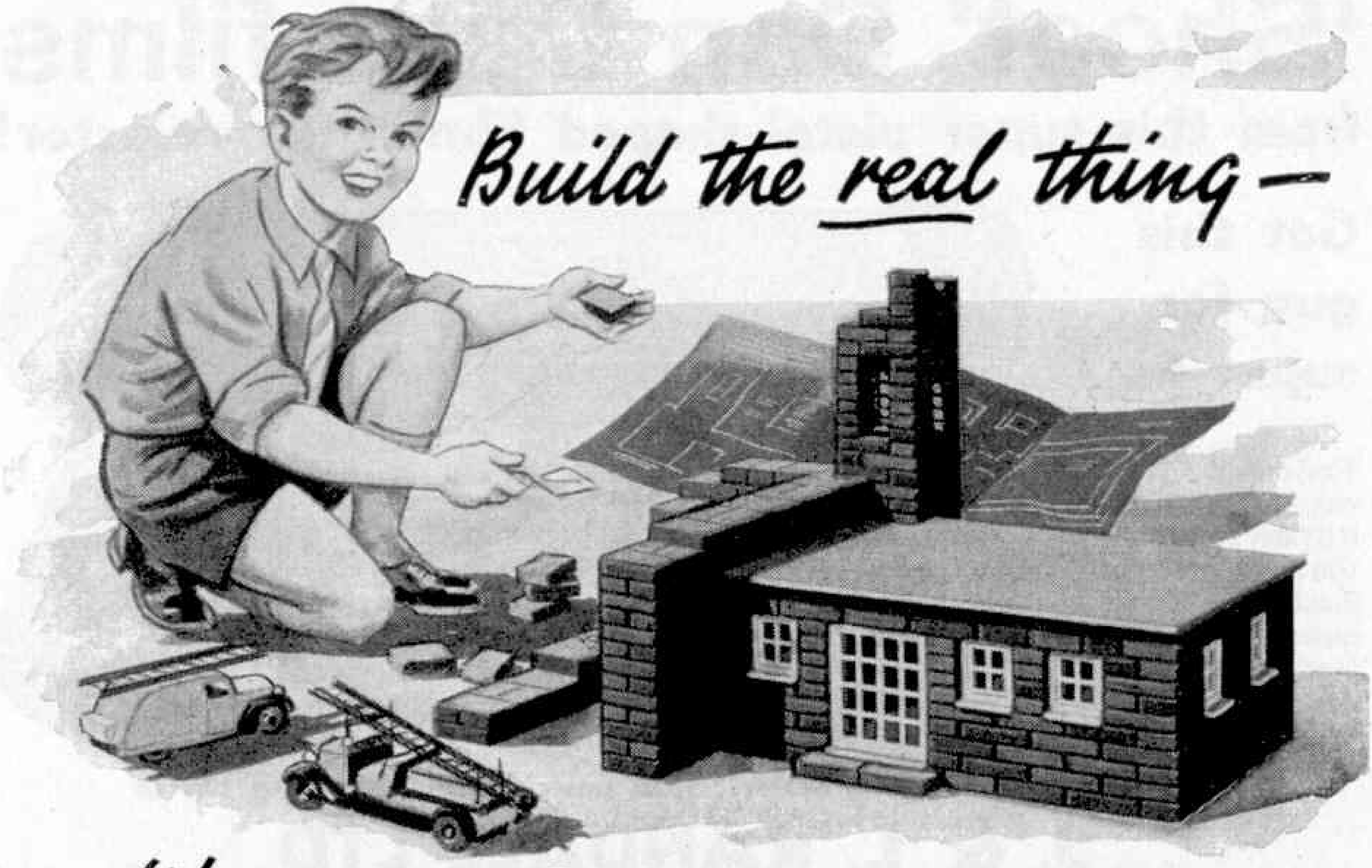
Full Postal

..... ADDRESS

Firmly affix 1½d. stamp *in margin* X.V.S./Nov.54

DO THIS NOW!

Post form in 1½d. stamped, unsealed envelope to Dept. X.V.S. People's Home Library, 5, Dryden St., London, W.C.2. Offer applies U.K., Eire only, closes Nov. 30.



with **BRICKPLAYER**

BRICK and MORTAR BUILDING KIT and ACCESSORIES

Brickplayer Kit 3	25/6
Brickplayer Kit 4	47/6
Kit 3A converting Kit 3 into Kit 4	25/6
Brickplayer Farm Kit	56/6
2,000 Bricks Box	53/6

Extra Bricks, Roofing and Cement in low priced packs.

Windows and Doors obtainable singly.

The Brickplayer Kit contains miniature bricks in all required shapes, mortar, roofing, plastic windows and doors, plans, and instruction booklet. All models are architect designed to '0' gauge scale. Buildings can be permanent or dismantled by merely soaking in water and the bricks used again and again.

If your dealer cannot supply, write for leaflet and address of nearest stockist to:

J. W. SPEAR & SONS LTD.
Dept. "M" • Enfield • Middlesex

YOUR IDEAL XMAS GIFT

'Shoot' Dan Dare films

from this super pistol-shaped film-strip projector!

Get this gun for super fun!

Follow DAN DARE'S adventures with this exciting DAN DARE Space Projector. Just point it at any smooth white or pale cream surface, squeeze the trigger and DAN DARE appears on your screen. Each time you release and squeeze the trigger the next picture is automatically shown, and each film strip tells a complete DAN DARE story. The famous MERIT lenses ensure good magnification and clear definition. Complete with DAN DARE Space Film Strip. Price 9/6. A large number of additional film strips available at 1/- each.

Of all good dealers and stores. Send postcard for Illustrated List to

J. & L. RANDALL LTD

(Dept. 3), MERIT HOUSE, POTTERS BAR, MIDDLESEX

Be the envy of your pals this Christmas !

Get "onside" with

Famous Football Stars

TOMMY LAWTON RON ALLEN
KEN ARMSTRONG TOM FINNEY

who are already among the thousands of keen players of

WEMBLEY

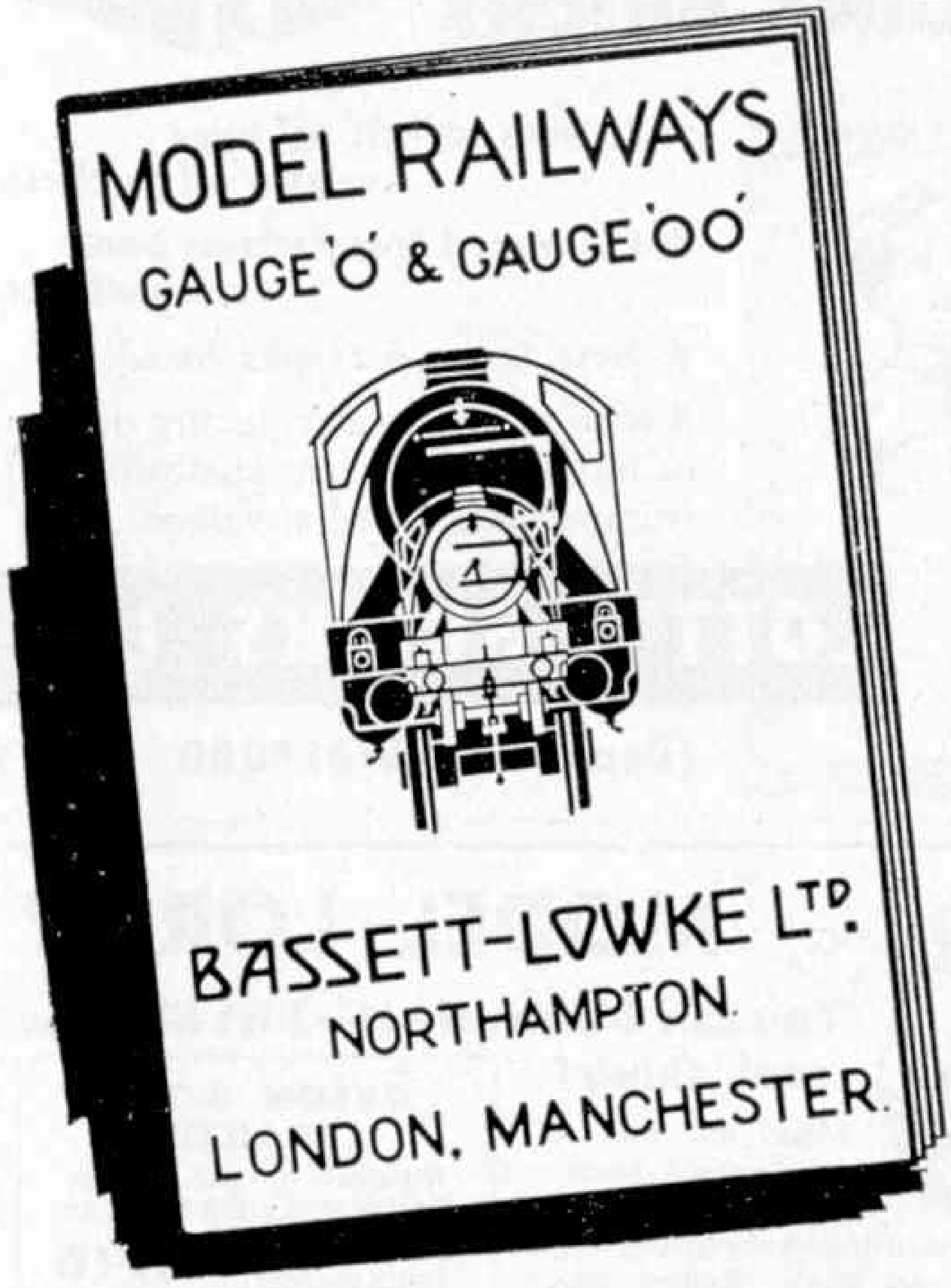
WEMBLEY - THE GREAT NEW FOOTBALL GAME!

For only 24/6 postage and tax paid.

You too can share with the stars the excitement, the thrills, the fun of this wonderful new game of skill and chance. Years of fun for you and the whole family. Don't be the odd man out — send Postal Order NOW (and name and address in BLOCK LETTERS) to:

TRIO TRADING CO., 56 Church Street, Marylebone, London N.W.8

THE guide to endless pleasure!

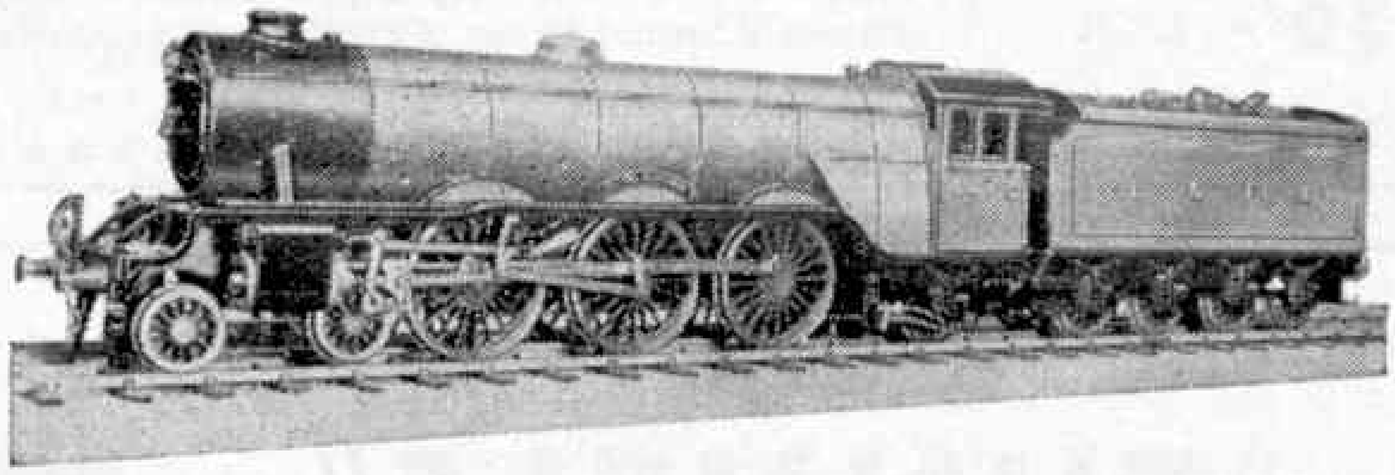


Here's the fullest guide yet to greater pleasure and interest for the Model Railway enthusiast. In the systems offered in this New Gauge '0' and '00' Catalogue, prepared train sets are now available in a variety of types: electric, steam or clockwork, passenger or goods. All the most popular classes of models may now be obtained in a wider range of types and prices than ever before.

Do you know what exciting prospects there are for owners of the Gauge '0' and other Model Railways? If you possibly can, pay a visit to Bassett - Lowke's London Display Showrooms where all the latest models and layouts are freely demonstrated for you.

Write now to Dept. MR/17 for this 100 page fully illustrated Catalogue. Price 2/–. The most comprehensive ever issued by BASSETT-LOWKE. Its exciting suggestions include details of Gauge '0' and '00' Railways.

Illustration shows the popular "Flying Scotsman"—one of the range of moderately priced Locomotives fully described in our New Catalogue.



MODELS BY BASSETT-LOWKE

BASSETT-LOWKE LTD.

Head Office and Works: NORTHAMPTON

LONDON SHOWROOMS: 112 High Holborn, W.C.2 MANCHESTER SHOWROOMS: 28 Corporation Street, 4

Build real-life models with LOTT'S TOY STONE BUILDING BRICKS

★ In sets to suit all ages — and all pockets.

★ Coloured instruction book with each set.

★ Sets from 6/11 per box.

Ask to see them at your toy dealers, or write for price list, enclosing 1½d. stamped addressed envelope.

LOTT'S BRICKS LTD

(Dept. 14) WATFORD HERTS

FOR 'BACK-ROOM BOYS'

LOTT'S CHEMISTRY SETS

Harmless fun with a scientific background. Complete with apparatus, chemicals and instruction book. Sets from 12/3 per box.

Foden

SCALE **MODEL LORRY**

You can Dismantle it—Just like the real thing!

Made up from 65 standardised parts—all replaceable. Shaft drive. Universal coupling. Ackermann-type steering. Floating rear bogie. Rubber tyres. Powerful Spring Drive. Comes ready assembled.

56/- *EACH*

DYSON 8-TON TRAILER

Attaches to rear of the FODEN LORRY. And dismantles in the same manner. **17/6** *EACH*

★ *ASK YOUR DEALER TO SHOW YOU THESE WONDERFUL MODELS!*

ABBEY-CORINTHIAN GAMES COMPANY • LONDON S.W.1

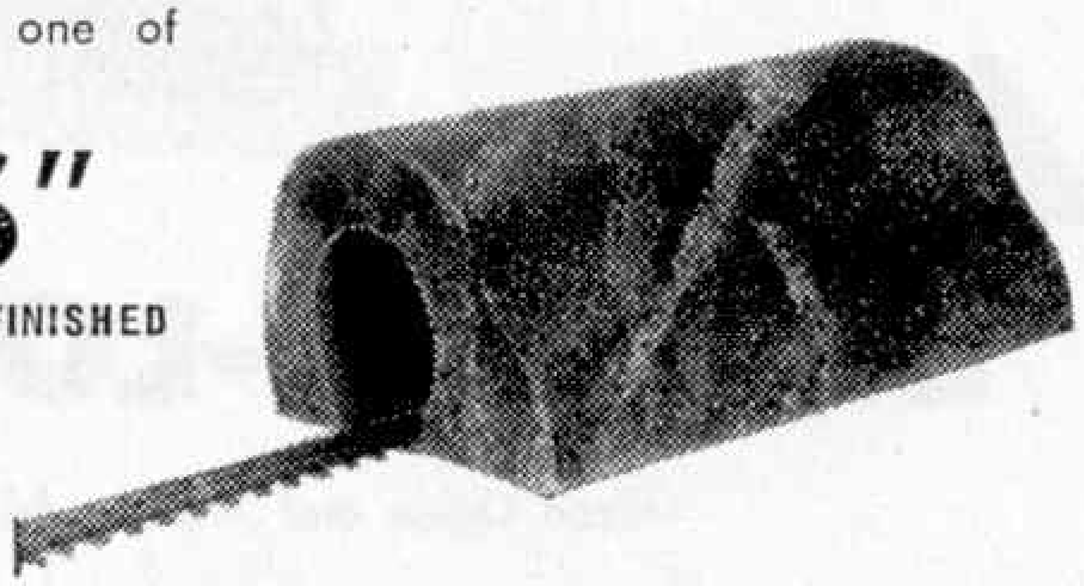
No Model Railway is complete without one of these realistic

"TUNNELS"

STRONGLY CONSTRUCTED - ATTRACTIVELY FINISHED

"0" gauge,	10 in. long ..	.. 6/– each
"00" „	10 in. „ ..	.. 5/– „
"00" „	7 in. „ ..	.. 4/6 „

Add 1/3 per tunnel for Post and Packing
Cash refunded if not satisfied.



WILFRID MAHOOD LTD., ORMSKIRK, LANCASHIRE

Tomorrow's Toys are here today!

DAN DARE WALKIE-TALKIE

Magnetically powered and using no batteries, the Dan Dare Walkie-Talkie is ready for immediate use Supplied with 25 ft of flex, its range can be increased by adding more flex, even up to a thousand yards. For long distance communication indoors or out, the Dan Dare Walkie-Talkie, which is a 'Merit' Electronic Product, has great possibilities for really interesting games.

'MERIT' SUPERSONIC GUN

If you want super fun get one of the exciting 'MERIT' Supersonic Guns! This Super Space Gun not only shoots a powerful ray of light which can be switched to White, Green or Red, but also emits an independently operated high-frequency BUZZ that is felt as well as heard. Remember to ask for a 'MERIT' Supersonic Gun to ensure you get the best.

Of all good dealers and stores

Send postcard for details of other exciting 'Merit' products

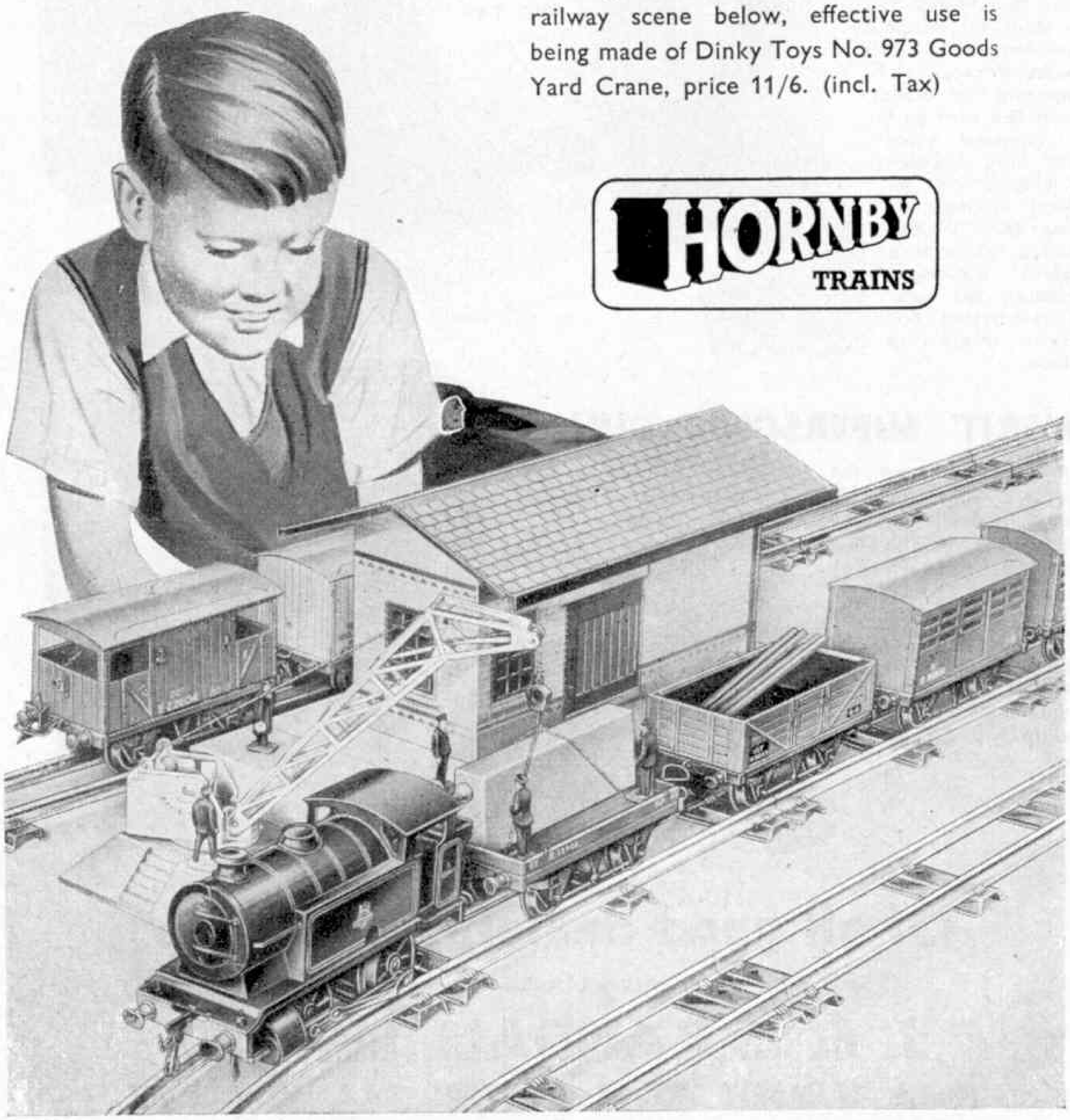
J. & L. RANDALL LIMITED

(Dept. 3) MERIT HOUSE, POTTERS BAR, MIDDLESEX

Load up the Goods!

What opportunities there are for lasting fun with a goods depot made up of Hornby equipment. Hornby Clockwork locomotives—now in British Railways colours—are long-running and strong-pulling, and there is a variety of rolling stock and accessories to build up an exciting model railway. In the Hornby railway scene below, effective use is being made of Dinky Toys No. 973 Goods Yard Crane, price 11/6. (incl. Tax)

HORNBY TRAINS



Next Month: "ON THE FOOTPLATE"—LIVERPOOL TO LONDON

MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

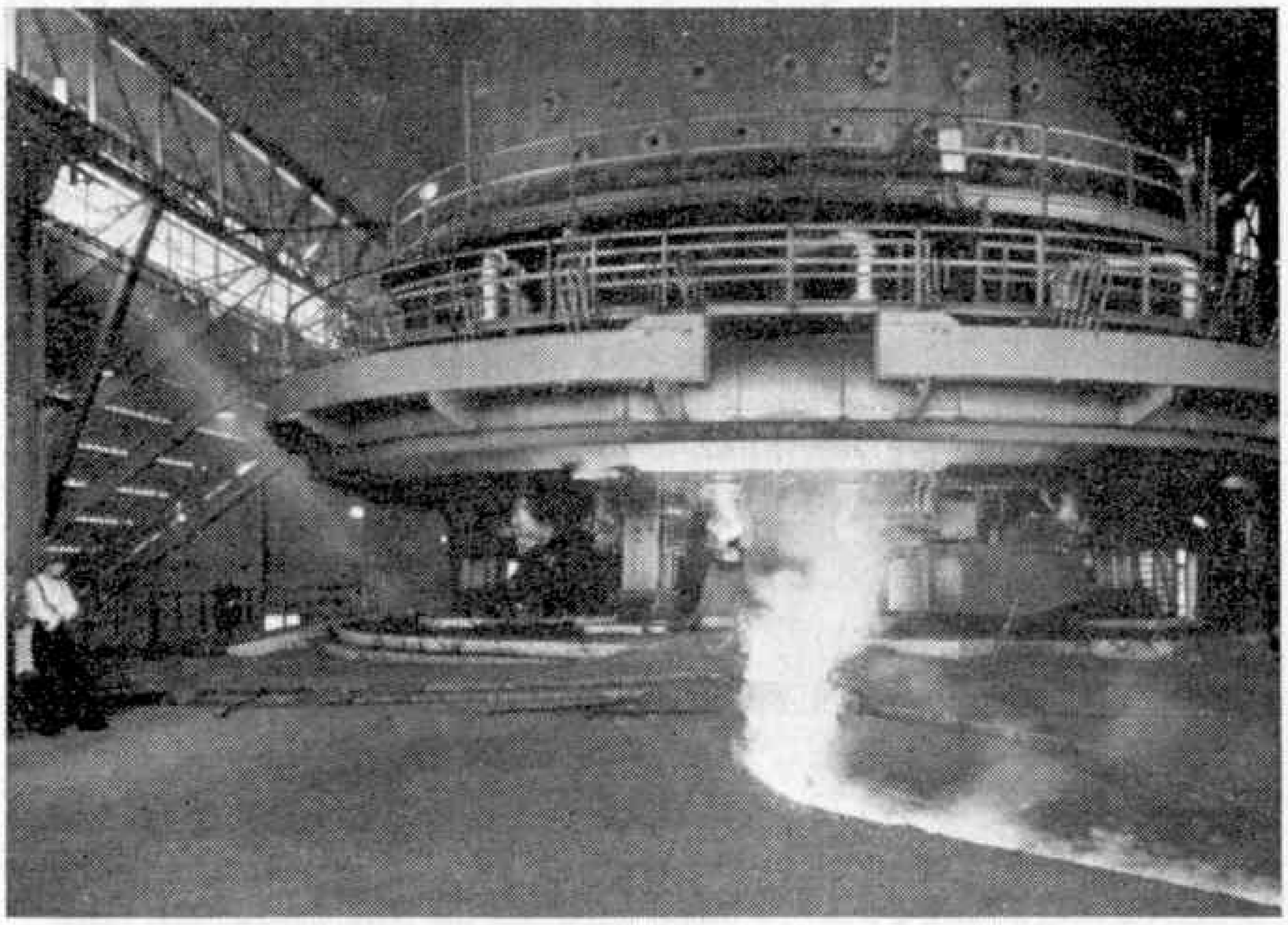
EDITOR : FRANK RILEY, B.Sc.

Vol. XXXIX
No. 11
November 1954

Coming Attractions

I wonder at what time of the year we begin to think about the Christmas Season that will bring it to an end. I wonder too what comes first into our minds when we are reminded in some way of the approach of Christmas. It may just be thoughts of good things to eat, or perhaps dreams of the brightly coloured windows of the Christmas shopping period; but more likely it will be thoughts of such things as Christmas trees, and all that they represent in good will and the peace this brings, that will first spring into our minds. The trees certainly came into mine at an early stage this year—several months ago, in fact. One result of this will be a fine illustrated article in the December *M.M.*, explaining where they come from and how they find their way to those who make them centres of Christmas customs and rejoicings.

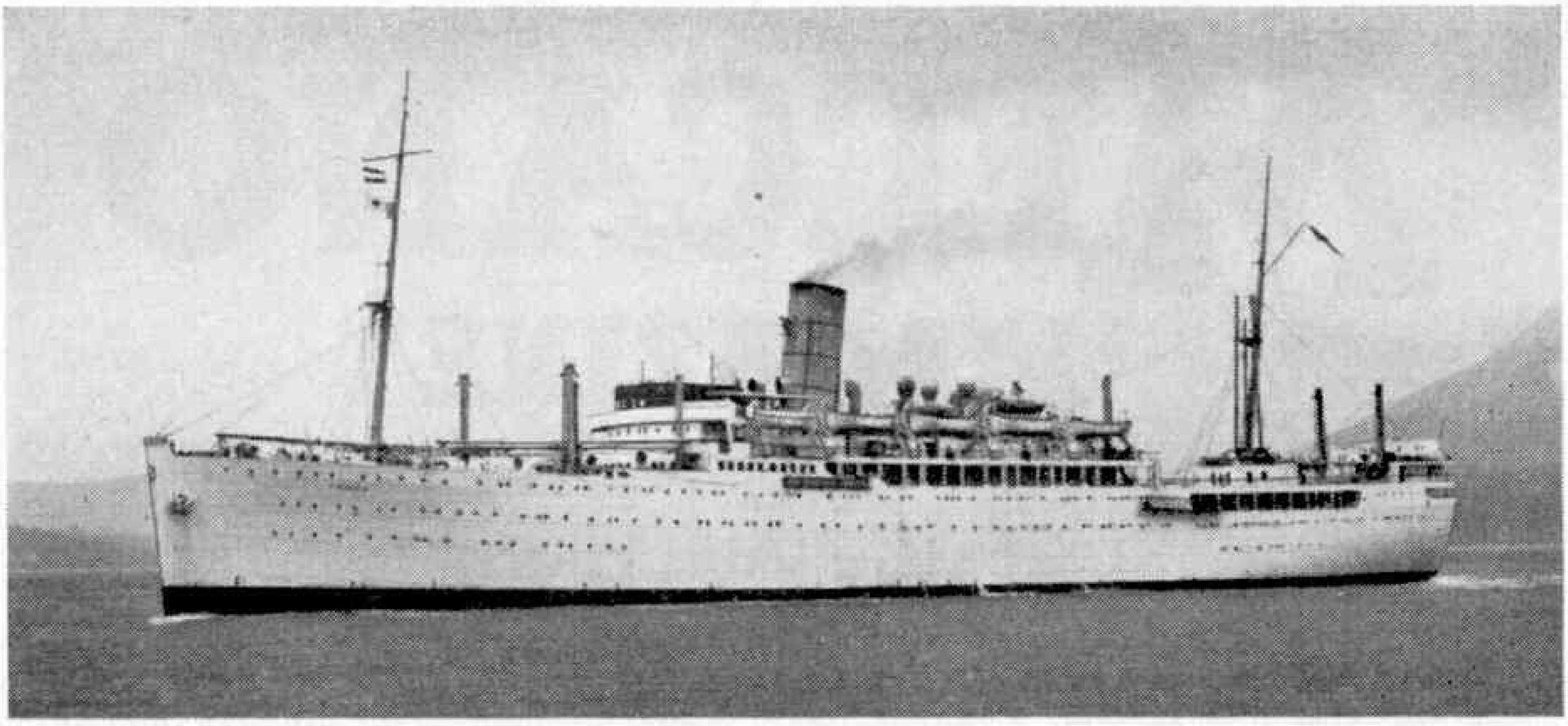
This article will open the attractions of the Christmas issue of the *M.M.*, which will have a fine topical cover and something inside for everybody. It will include articles with a special Christmas appeal, and a wealth of others full of interesting information about aircraft, locomotives and so on. And of course there will be the usual special pages for Model-builders, Dinky Toys enthusiasts and Hornby and Hornby-Dublo Train owners, so many of whom will join us for the first time during the great holiday month.



Tapping a blast furnace, molten pig iron produced in it flowing along a channel prepared for it. The furnace is Queen Anne, one of the four giants in which pig iron is made in the works of the Appleby-Frodingham Steel Company. These furnaces are described and illustrated in the article on page 520.

Although this special Christmas number will be larger than the usual issues of the *M.M.*, there will be no extra charge for it. It will be published on 1st December, price 1/–, and I should like to warn those of you who have no definite order with your newsagent, or with your Meccano dealer, to make sure that you place one and run no risk of missing your copy.

The Editor



Story of the "Corfu"

P. and O. Services to Australia and the Far East

OUR cover this month shows a scene in King George V Docks, London. Prominent in the picture is the Peninsular and Oriental liner *Corfu*, of 14,280 gross tons, which carries 400 First and Tourist Class passengers and 6,000 tons of cargo between the United Kingdom and Hong Kong, via Port Said, Aden, Bombay, Colombo, Penang and Singapore. Her passengers embark at Southampton.

Corfu was built on the Clyde, in 1931, for the P. and O. Far Eastern service, and until the outbreak of war had a very different appearance from that she presents today. She had then two black funnels, a stone coloured superstructure and a black hull.

In 1939, when the war came, she was converted into an armed merchant cruiser and given eight 6 in. guns. Her job was to intercept, challenge and search neutral shipping in the North and South Atlantic. She also had occasional spells of convoy duty, and while on this work she was in collision with the aircraft carrier H.M.S. *Hermes*.

It was 3 a.m. and visibility was very poor when this happened. The aircraft carrier loomed up out of the darkness and ripped thirty feet of plating out of *Corfu's* starboard side before penetrating deep into her No. 2 hold, which contained hundreds of 6 in. shells. Those of her crew who were on "watch below" tumbled up on deck, rubbing their eyes, to find out what was the trouble. H.M.S. *Hermes* meanwhile had switched on her flight-deck lighting, used for guiding incoming aircraft and consisting of a long line of lights down the centre of the flight-deck, to facilitate any rescue work that might be necessary. A voice in the darkness of the *Corfu's* deck was heard asking "What's that?" followed by another replying, "Well, I don't know how we got there, but it looks mighty like the A23 road to Brighton."

The illustration at the head of the page shows the Peninsular and Oriental liner "Corfu," which provides service between London and Hong Kong via the Suez Canal. The vessel is seen in King George V Docks, London, on our cover, which is based on a photograph by G. F. Allen, which we reproduce by courtesy of "Engineering."

Corfu was repaired, and in 1941 acted as guardship at Addis Atoll in case of a Japanese attack. In 1942 she was equipped with three catapult-launched Kingfisher aircraft and sent out searching for blockade runners from South America to the Bay of Biscay.

In 1944 she arrived at Mobile, Alabama, where her conversion into a troopship began and occupied a year. A trooping programme followed, during which she brought ex-prisoners-of-war of the Japanese back home from Singapore.

Altogether, during the war years, the vessel steamed 239,161 miles, the equivalent of 9½ times around the world. In July 1947 she returned to the Clyde—where

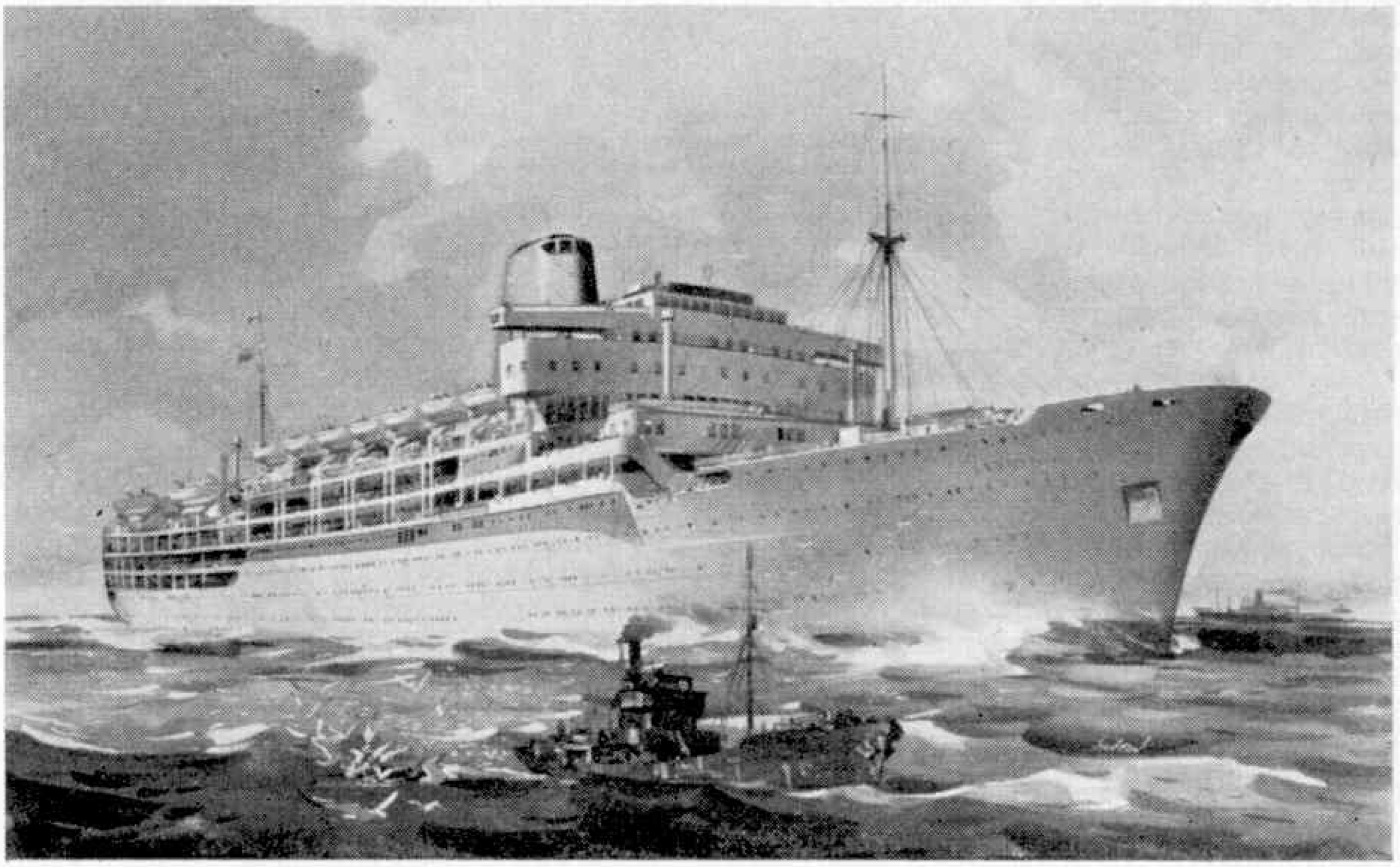
she had been built—for a well earned refit which lasted 18 months, and from it she emerged with a "New Look." Her after funnel had been removed and the remaining one was painted buff; her hull and superstructure were white; and her passenger accommodation had been restored to its high peacetime standard of comfort.

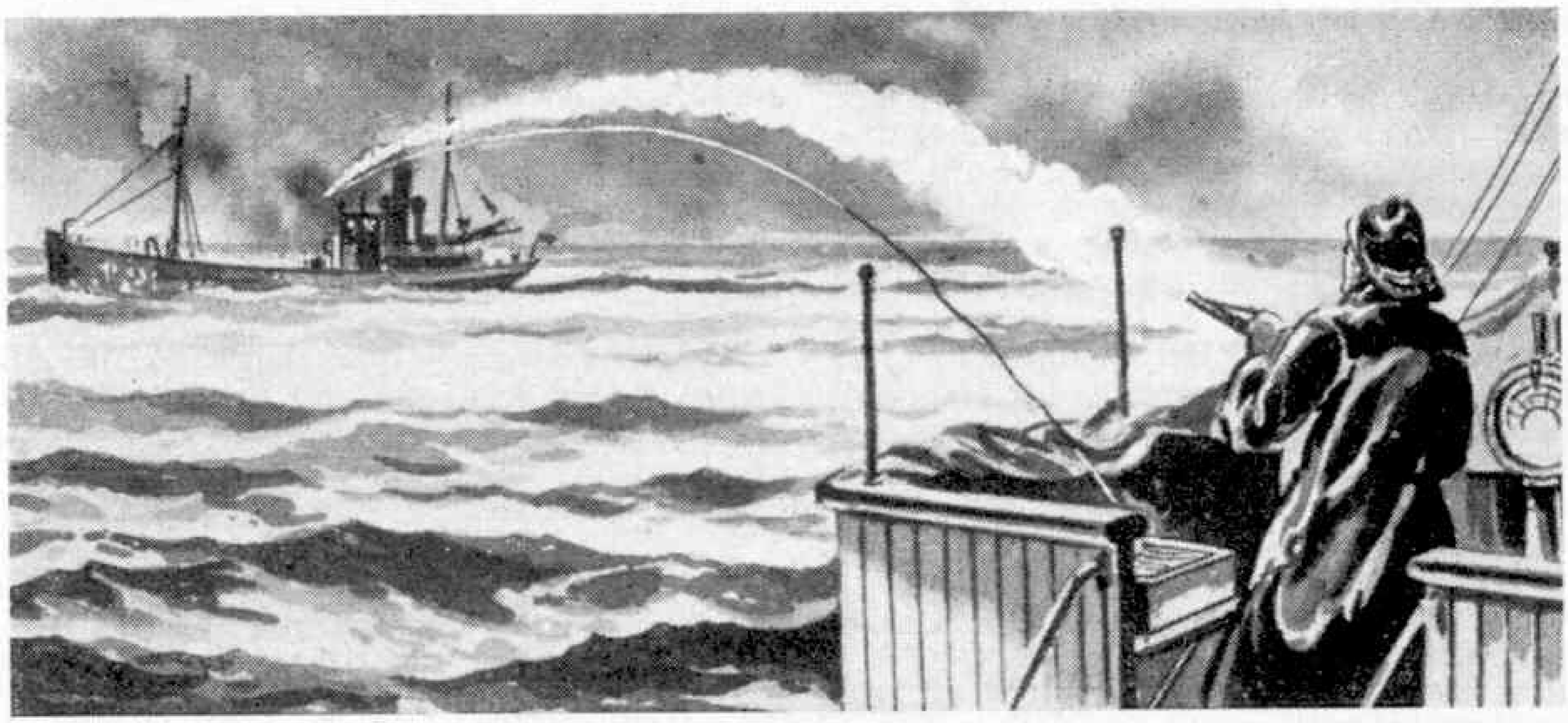
She returned to the P. and O.'s Far Eastern passenger service in company with the *Carthage*, her sister ship, and the *Canton*. These vessels were joined in 1950 by the 24,000-ton *Chusan*, which was the first large ship to be fitted with Denny-Brown stabilising fins for correcting the roll of a vessel electrically by means of horizontal and vertical gyroscopes.

The Far East is also served by the six "S" Class cargo liners, *Surat, Shillong, Singapore, Sunda, Soudan* and *Somali*, each of which carries 12 passengers. Perhaps the best known of the P. and O. passenger liners, however, are the larger vessels running to Australia. There are the two 30,000-tonners *Iberia* and *Arcadia*, and the 28,000 ton *Himalaya*, as well as the four *Straths*. Of the latter vessels *Stratheden* and *Strathmore* are of 24,000 tons and *Strathaird* and *Strathnaver* of 22,000 tons. The biggest ships on this service are *Iberia* and *Arcadia*, both of which have been in the news recently, as they were only completed this year. Other cargo liners of from 8,800 to 10,000 tons, are on the service between the United Kingdom and Australia, and seven cargo liners ranging from 7,100 to 7,700 tons serve India and Pakistan.

The origins of the Peninsular and Oriental Company date back to 1837, when Arthur Anderson and Brodie Wilcox formed the Peninsular Company. In 1840 this became the Peninsular and Oriental Steam Navigation Company, which is now the parent of many associate lines and firms. The partners had given their aid to the Queen of Portugal in the form of a schooner that was fitted out for gun-running to Portugal. Later, they supported the Queen of Spain during her struggle with the Carlists. Their success helped them to obtain the first contract to Iberian ports, signed in 1837, for the carriage of mails. The house flag, which shows the blue and white and the red and yellow of the former kingdoms of Portugal and Spain, the Company's name and the name of the latest addition to its fleet, *Iberia*, all reflect the early days of the Peninsular and Oriental Steam Navigation Company.

The latest additions to the Peninsular and Oriental fleet are the 30,000-ton steamships "Arcadia" and "Iberia." The picture of "Iberia" reproduced below is an artist's impression of the latter of these two liners, a handsome vessel of modern type.





Fireworks that Save Lives

By Arthur Nettleton

GUNPOWDER Plot celebrations are not the only occasions today when fireworks are used. All over the world, indeed, the science of pyrotechnics, as firework making is called, is helping to promote safety at sea, for signal rockets, line-throwing rockets, and other devices in the same class are widely used in maritime activities. They are means of communication between ship and shore, or between vessels at sea. They are invaluable in life-boat operations, not only to summon the life-boatmen when an emergency arises, but also to illuminate the scene of the rescue, to convey instructions to the men aboard the distressed ship, and to get life-saving lines aboard her.

For conveying messages under such difficult conditions, rockets have not been superseded by radio, and every British ship is required to carry distress signal apparatus and line-throwing equipment. There is also an internationally accepted code of signals, using stars of different colours.

Maroons that throw out a green flare are used to call out life-boat crews, and a green flare turning white is used if it is necessary to recall them. Such signals may be made by coastguards, and by lighthouse and lightship keepers, as well as by the men in charge of life-boat stations. Life-boats also carry hand flares, self-igniting fireworks which can be held in the hand. These display a brilliant red light of 10,000 candle power and burn for nearly a minute.

Still more powerful are the self-igniting parachute distress signal rockets carried by shipping. These reach a height of at least 750 ft. and then drift slowly across the sky, the red flare being suspended on a small parachute. Then there are five-star red signals—Roman candles with steel cases instead of the cardboard tubes used for display fireworks, a steel container enabling the stars to be thrown to a greater height than in the old type of Roman candle. Attached to the side of the case is also a powerful red light.

Firing a line from one trawler to another by means of the Schermuly pistol rocket. The apparatus is carried on practically every British fishing vessel. Our illustrations are reproduced by courtesy of Schermuly Pistol Rocket Apparatus Ltd.

Firework makers have standardised such products and have continually sought to improve them during the last 40 years. The steel container, for instance, was introduced as a direct result of experiences during World War II, paper tubes having been found unsuitable owing to their being affected by damp. This defect was so marked that in 1948 an International Conference of Safety at Sea suggested the use of steel cases for distress signal equipment.

How do life-saving fireworks get their different colours? It's all a question of

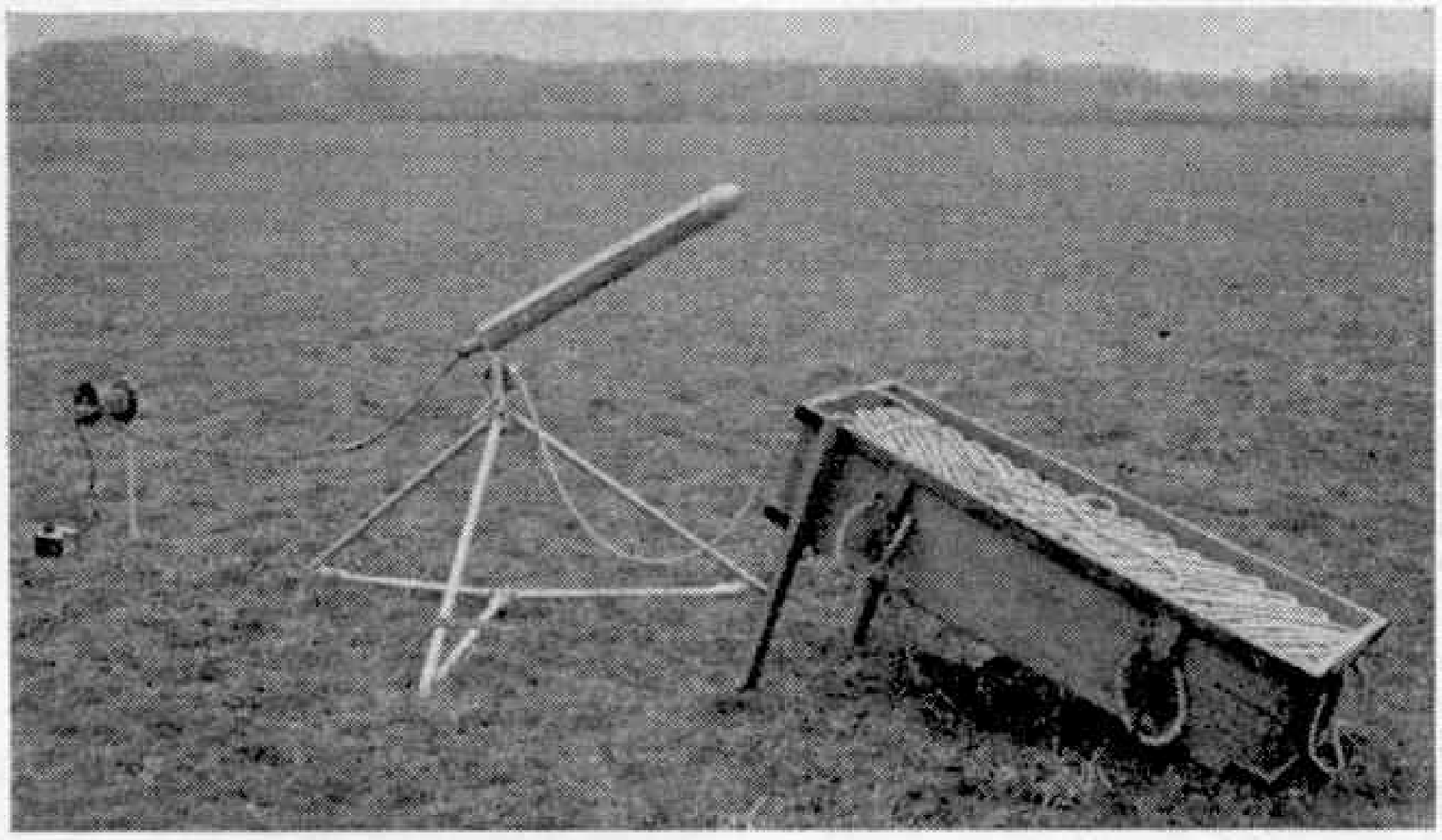
the chemicals they contain, and experts in pyrotechnics have perfected various formulae that will produce the colours required. For instance, copper salts give a blue light, sodium compounds yield a yellow flame, and a green light is given by those containing barium. Aluminium and magnesium powders are used when an intensely brilliant light is wanted.

Altogether, more than 40 chemicals are used in making rockets, maroons, flares, and other types of fireworks for life-saving. Rocket stars are added after the tube has been nearly filled, being inserted into the case in a bell-shaped paper container.

One of the most useful devices is the line-throwing rocket and the pistol rocket line-throwing apparatus. Rockets made for throwing lines are really twin rockets joined head to tail, so that when the first has burned out the second gives fresh impetus.

Historically, the first line-thrower for marine rescue operations came into general use in the early years of last century. But this, although used with great success for throwing lines from shore to ship by life-saving stations, was a mortar and not a firework device.

Rocket line-throwers were employed for shore-to-ship rescues as far back as 1808, but the first practical equipment for throwing a line from ship to shore was not introduced until 1897, when William Schermuly invented his now famous pistol rocket apparatus. Today Schermuly equipment is carried by every British ship and has been adopted as the standard line-throwing equipment by some 23 other maritime countries.



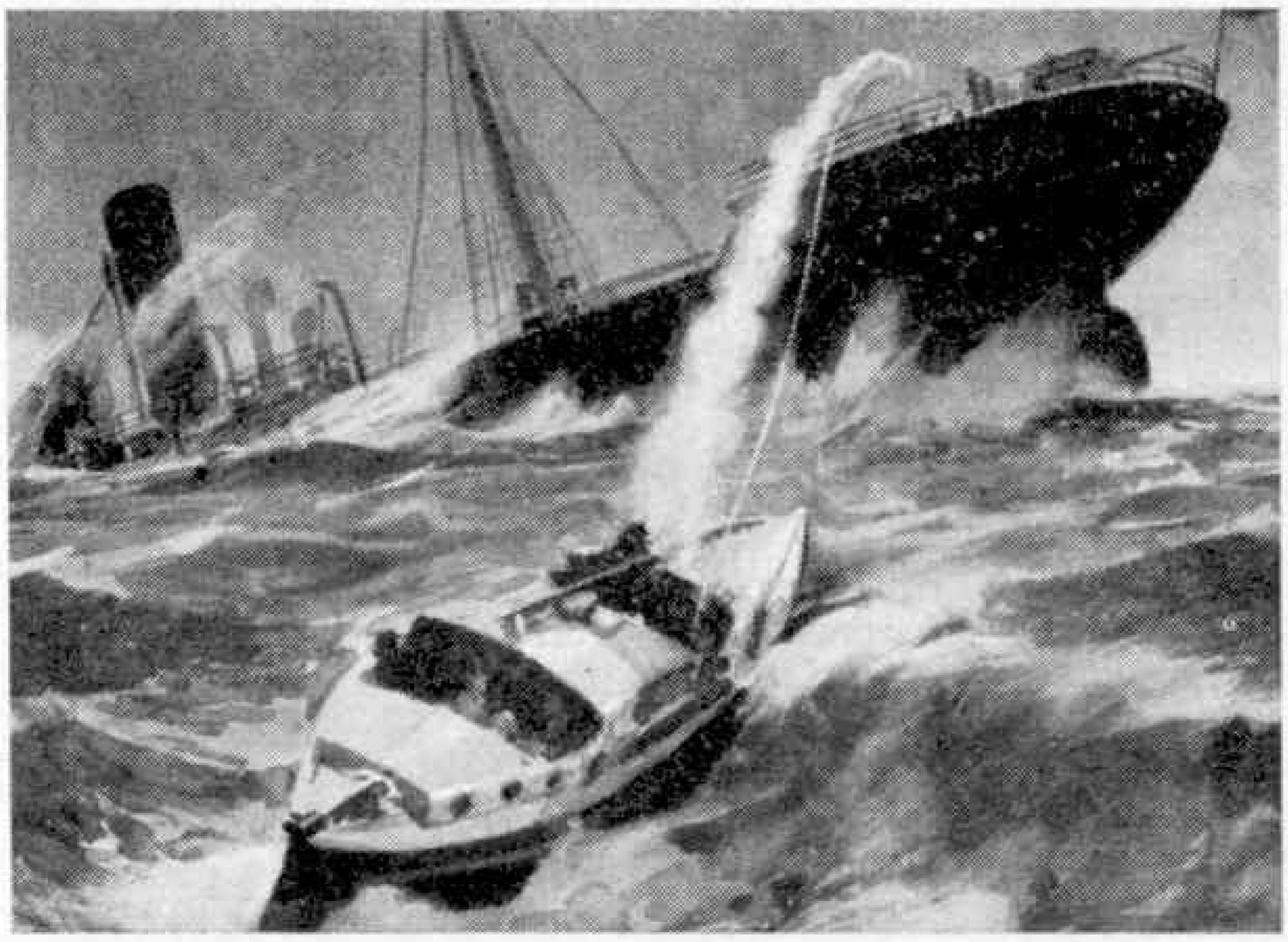
Schermuly Coastguard line-throwing apparatus ready for firing. The 12 lb. rocket is electrically fired and carries with it a 1 in. line 300-350 yards long.

The story of this apparatus is one of the romances of the maritime world. William Schermuly got his idea for a pistol rocket line-throwing device when he was aboard a ship wrecked in a storm off the South Coast of England in the 1870's. Efforts to get a line to the ship by firing rockets from the shore were unsuccessful, the rockets being forced back by the high wind.

Schermuly realised the need for some means of firing line-throwing rockets from distressed vessels, and he recognised that ordinary rocket apparatus could not be used from decks which were awash.

A change of wind spared the wrecked ship, and Schermuly applied himself to the problem. When he had invented suitable equipment he started to press for its compulsory carrying by all seagoing

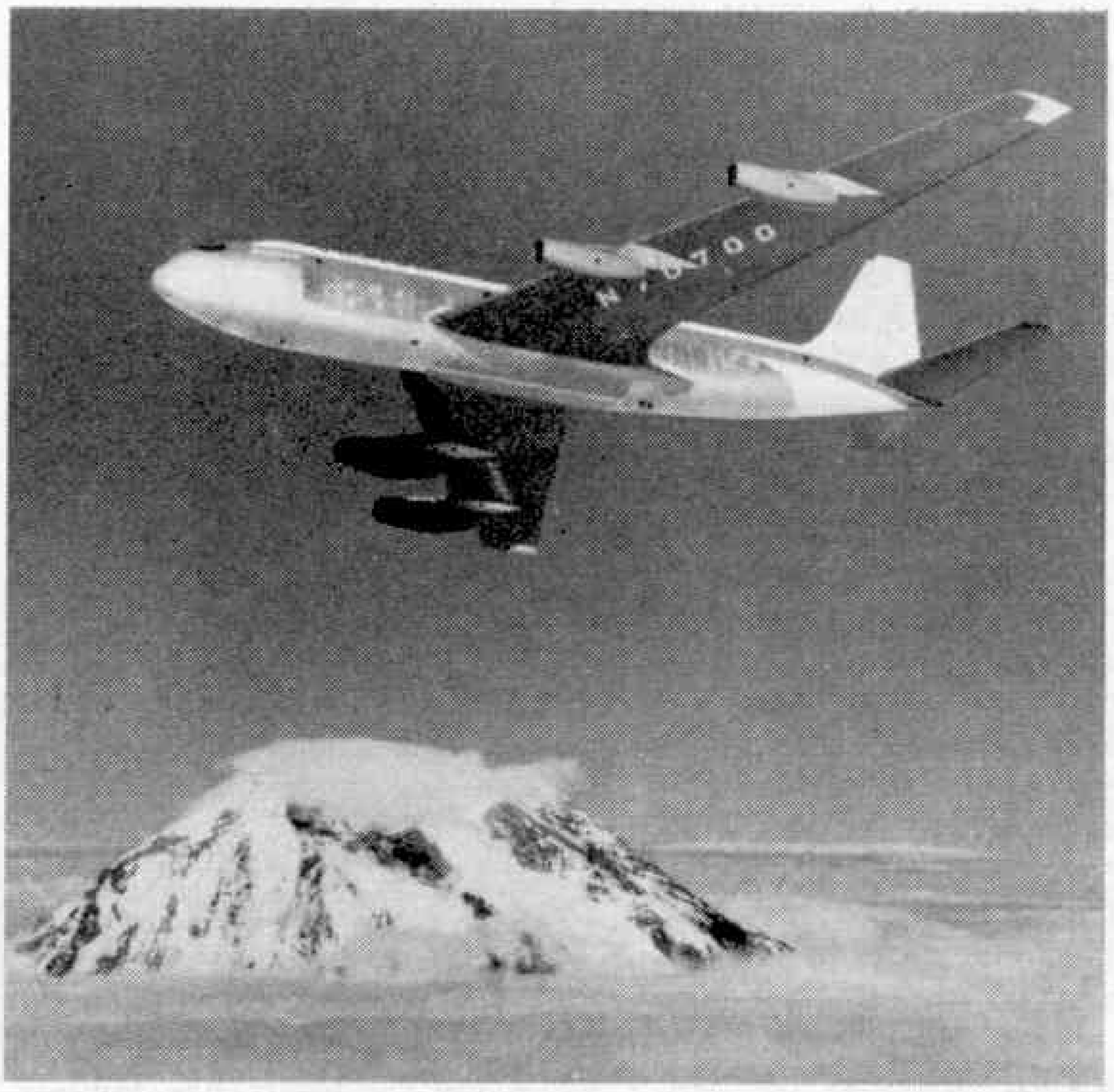
(*Continued on page 558*)



Firing a pistol rocket line from a life-boat to a vessel in distress. All R.N.L.I. life-boats carry this equipment.

America's First Jet Liner

By John W. R. Taylor



Shown above is the Boeing 707, America's first jet transport, over the snow-capped peak of Mt. Rainier, 14,408 ft. high. The illustrations to this article are reproduced by courtesy of the Boeing Airplane Company, Seattle, U.S.A.

AFTER waiting years for the American aircraft industry to produce its first jet transport, everyone looked forward to something rather special when it was known that the Boeing Company were building a prototype. Their Model 707 is hardly likely to cause any disappointment, because it looks and flies like the thoroughbred one would expect from Boeing, who have more experience in building big aeroplanes than any other firm in the world.

It is not difficult to trace its parentage. The graceful sweptback wings and podded engines follow closely the designs of the Boeing B-47 and B-52 jet bombers; but in size the Model 707 falls mid-way between them. Fully loaded it weighs 190,000 lb., and has a wing span of 130 ft., compared with the B-47's 116 ft., and B-52's 185 ft.

One fact that emerges from these figures is that the Model 707 is not, as many people would have us believe, a direct competitor of the Comet. On the contrary, it is a much bigger aircraft, able to carry from 80 to 130 passengers, whereas the largest Comet, the Series 3, has accommodation for 58-76 passengers. So the Boeing machine would be too large to do jobs for which the Comet 3 is ideal; just as the Comet could never offer the same payload as the Model 707 on long-range airline services.

Having sorted out that misconception, let us now take a closer look at the American transport, which made its first flight on 15th July last.

Its engine arrangement leaves no doubt of its country of origin. Nearly all large U.S. jet 'planes have been designed with their engines slung under the wings in pods, whereas British designers prefer to see turbojets buried inside the wing-roots, as in the Comet, Victor, Valiant and Vulcan.

There is something to be said for both layouts. Use of pods has enabled Boeing to fit a thin "flexible" wing, which should ensure good handling qualities at high speeds and help the aircraft to "ride" the severe air bumps encountered in clear air above about 18,000 ft.

On the other hand, the British practice of buried engines offers less "drag" to the airflow; fuel, undercarriage and engines can all be accommodated easily inside the thicker wings; and the greater wing area ensures easier control at low speeds and better performance at very high altitudes.

This is especially important for a bomber, as it enables it to fly at just below the speed of sound, above the operating height of enemy fighters. But a jet transport is a different proposition. It is unlikely that airlines would want to fly at 60,000 ft., like the British "V"-bombers. In fact, there would be little point in doing so.

In aircraft designed to fly at medium altitudes some of the advantages of buried engines in big thick wings disappear, and pods seem to come into their own. For one thing maintenance and replacement

are easier. Also, if bigger, more powerful engines become available in due course, it is simply a question of hanging on bigger pods and, perhaps, stiffening the wing a little; whereas it might prove completely impossible to fit bigger engines inside the wing. Finally, from the point of view of safety, if an engine catches fire or breaks up, it is far less likely to do any serious damage if it is hanging well below the wing in a pod.

All these things helped to persuade Boeing to choose podded engines for the Model 707. But its layout was not decided as easily as that, and it is doubtful if any other machine has been preceded by so many "paper" aeroplanes that never flew. There were well over 150 of them, designed between 1946 and 1951. Some were merely the simplest possible design layouts, accompanied by weight estimates. Others were taken far along in the stages of preliminary design, even to extensive research in the Boeing wind tunnel.

In all, a score of designs were investigated mathematically in great detail and developed on paper for consideration by airline and military chiefs. Among them were small, medium and large transports, each of which contributed something to the final design of Model 707.

The first really important one was a 1950 design called the 473-60, which was intended to fly in two 60-passenger versions, one weighing 135,000 lb. for airline services inside America; the other a 180,000 lb. model for international routes. But after a time it became obvious that there were faults in the design; so Boeing started again.

Meanwhile, the U.S.A.F. had decided to adopt flight refuelling as a standard operational technique, to increase the range of their bombers and fighters. Large orders were placed for the piston-engined Boeing KC-97 Stratofreighter, which combines the duties of transport and flight refuelling tanker, and eventually nearly 800 were built, 20 being assigned to each 45-'plane wing of B-47 bombers.

It did not take Boeing long to realise that, as the U.S.A.F. was gradually becoming an all-jet combat force, it might be a good idea to concentrate for the time being on a jet-powered development of the Stratofreighter, which would almost certainly be of use to the U.S.A.F. for aerial refuelling and might provide a useful basis for a jet transport design.

On the drawing boards, the KC-97 was shorn of its piston-engines and put through several successive stages of re-design, first with turboprop and then turbojet engines. Most promising of the turboprop projects was the gull-winged Model 367-60; which was eventually modified into Model 367-64, with a Stratofreighter fuselage, sweptback wings and tail, and two pairs of podded turbojets.

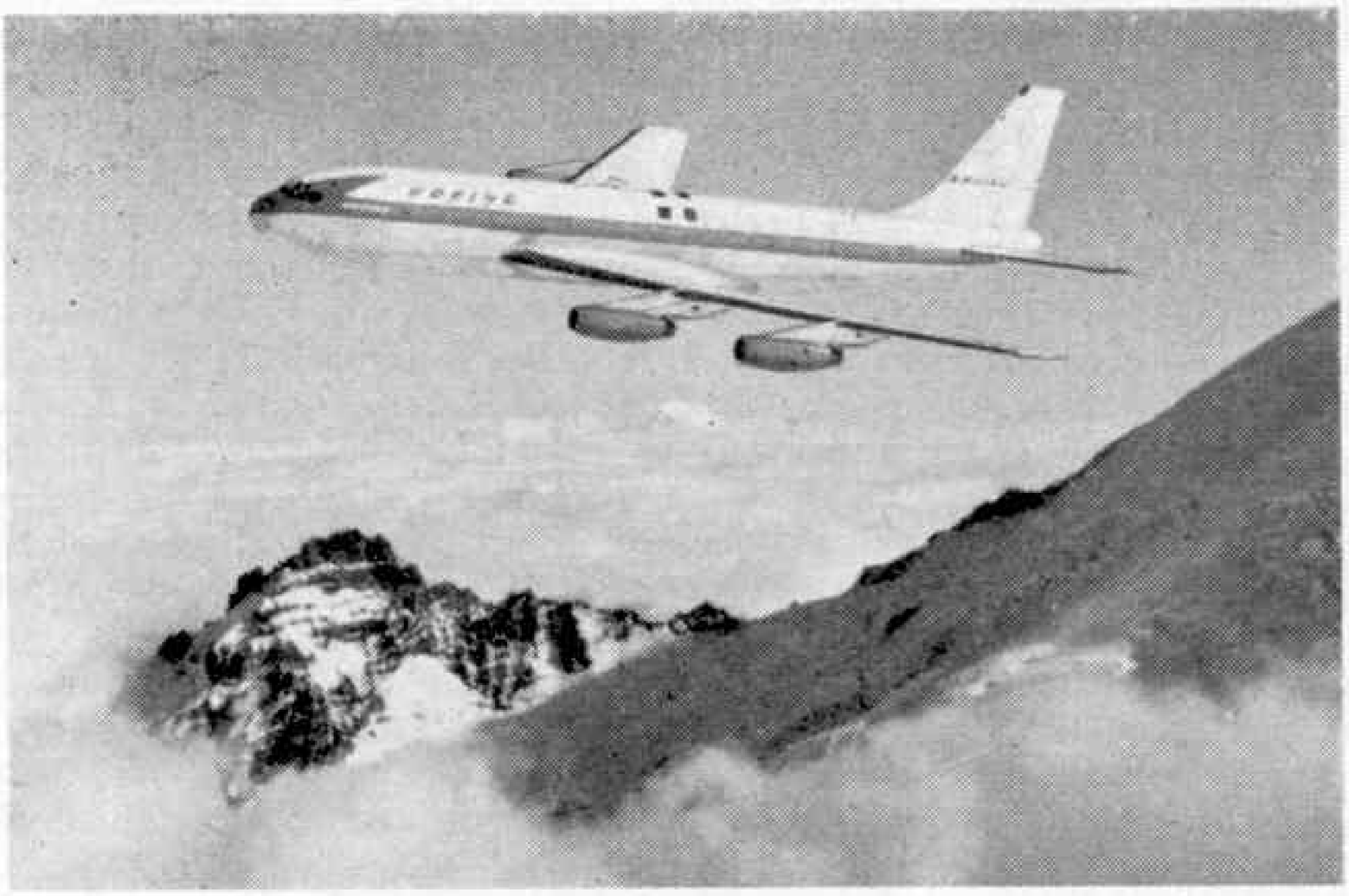
It was a good design and models of it spent more time in the high-speed wind tunnel than models of many aircraft that have been built and flown. Six complete wing designs were tested, the final choice being a fairly thin, sweptback wing with an area of 2,500 sq. ft., and span of 140 ft.

Still Boeing designers were not satisfied. They thought they could improve on the KC-97's "figure-8"-section fuselage shape; and the thin wing of the Model 367-64 not only held too little fuel but was more difficult to make than the wing of the new B-52 jet bomber.

So they got to work on yet another wing,

Model 707 prototype under construction in the Boeing Company's Renton, Wash., factory.

thicker and with a greater angle of sweep—35 degrees. But the earlier work was not wasted, for its outline shape was basically the same as that of the "64" wing, swept back a further 10 degrees. This gave it a span of 130 ft., and the same area of 2,500 sq. ft.



Another excellent view of the Model 707 flying over Mt. Rainier.

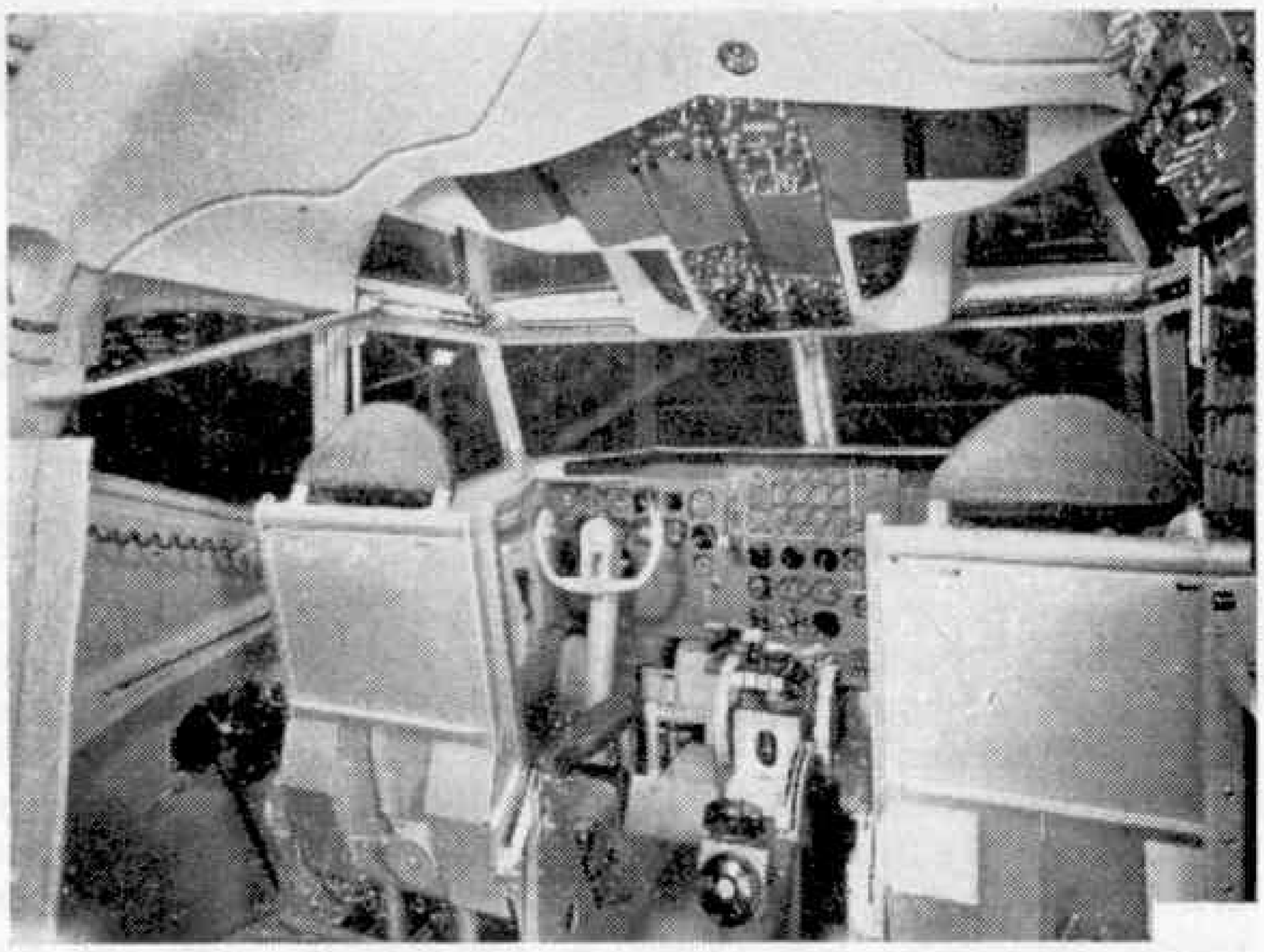
By then it was late 1951. In England the Comet 1 was nearly ready for airline service; yet America still had no jet beyond the drawing board stage. Even then, it is doubtful if the U.S. aircraft industry would have taken up the Comet's challenge to their long-established leadership on the world's civil air routes, had not Boeing suddenly realised that it might be possible to build a jet-liner that would also meet the inevitable U.S.A.F. future requirement for a jet-powered flight refuelling tanker.

The gamble seemed worthwhile, and they invested over £5 million of their own money into what they termed "Project X"—the design and construction of a prototype jet tanker-transport. The result, in due course, was the Model 707—a graceful, businesslike aircraft, powered by four 10,000 lb. thrust Pratt and Whitney JT3-L turbojets and with a striking yellow, chocolate and silver colour scheme.

Soon after it was moved, in May of this year, from the hangar in which it had been built in great secrecy, it suffered a severe setback. During taxying trials down the runway at Renton Airport, Washington, the port undercarriage leg collapsed, damaging the wing and delaying the first flight for two months. It was the sort of annoying incident that can happen to any new aeroplane and only increased the determination of Boeing's Chief of Flight Test, "Tex" Johnston, to prove the real capabilities of the Model 707 once it did get into the air.

He had his chance on 15th July last. Opening up the four big engines, he took off the lightly-loaded aircraft in only 2,100 ft. of the 5,400 ft. runway, and remained in the air for 1 hr. 24 min. on the first flight. Within five days, he had flown it to altitudes above 42,000 ft., and speeds of more than 550 m.p.h.—about four-fifths of the speed of sound at that height.

It was, of course, only the start of a long and thorough test programme, both in the air and on the ground, that will show whether the Model 707 is as good an aircraft as it looks. The U.S.A.F. seem to be convinced already, for they have just awarded Boeing a (*Continued on page 529*)



The cockpit of Model 707 shown almost completed.

BOOKS TO READ

Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"MODERN AIRLINES AND AIRLINERS"

By H. A. Taylor (Temple Press 9/6)

Airline travel is now a familiar way of getting about the world, and tens of thousands of people are flown across continents and oceans each year in a variety of transport aircraft ranging from Douglas DC-3s to mighty Super-Constellations, and at speeds that to your grandparents would have seemed fantastic—if they thought about air travel at all!

This excellent book is devoted entirely to air transport. After an introductory chapter explaining the basic facts in air transport history, it describes a visit to London Airport, navigational methods, radio aids employed to ensure safe "all-weather" operations, how a turbo-jet airliner is flown and how a pressurisation system operates. The author also explains how aircraft are designed and purchased, discusses flying boats and helicopters, the future of airline operation, and finally describes some of the developments and trends to be expected during the next few years.

The excellent half-tone illustrations show modern types of transport aircraft both under construction and in flight, and there are also many interesting line drawings.

"THE GREAT EASTERN 0-6-0Ts"

By Peter Proud (R.C.T.S. 2/6)

This recent R.C.T.S. publication is a reprint in book form of a series of articles that appeared in the Society Journal *The Railway Observer*. The author deals in his usual thorough manner with the several hundred 0–6–0 tanks that originated on the former Great Eastern Railway. The original Holden design was introduced to make good a shortage of shunting engines that was being felt during the early '80s. It was however successfully adapted for local passenger work and similar duties and the engines of this class were long a familiar sight at Liverpoool Street on what was correctly claimed as the world's greatest steam suburban passenger service.

Naturally, with several hundred engines built over a long period of years—the last in fact after grouping in 1923—variations were to be found and these are clearly recorded and described in the book. In addition there are lists giving numbers and other details of individual engines, and a table of dimensions. Well-reproduced half-tone illustrations back up the text.

Copies of the book can be obtained from the Hon. Publications Officer, R.C.T.S., Mr. D. H. Wakeley, 18 Holland Avenue, Cheam, Surrey, for 2/6 including postage.

NEW A.B.C. BOOKLETS

(Ian Allan 2/– each)

Huge, roomy, low slung bodies and conspicuous chromium radiator grilles easily distinguish American from British cars, but it is more difficult to identify particular makes, unless one knows just what to look for about them. *ABC of American Motor Cars* by John Dudley gives just the information the motor car "spotter" wants. It contains splendid half-tone illustrations of the current products of 18 American motor car manufacturers, and notes describing their development, with structural details likely to assist the spotter.

ABC of Ocean Freighters by H. M. Le Fleming lists mainly the vessels of those companies controlling dry cargo ships of about 3,500 tons gross and upwards from the British Isles that are not included in *ABC of Ocean Liners*, reviewed in the December 1953 *M.M.* The details given for each ship include date of construction, gross tonnage, dimensions, speed and type of engines and the colours of hulls and funnels. The vessels are listed according to company, the latter being arranged in alphabetical order. There are half-tone illustrations of typical ships of the fleets.

ABC of British Lorries by David J. Warburton, follows the usual pattern of *ABC* booklets. It lists 25 well-known British makes of lorries, giving in each case details of the firm's range of models, with notes to assist identification, and excellent half-tone illustrations of many of the vehicles described. The text ends with some notes on the present state of the "British Road Services" organisation, for the benefit of enthusiasts who followed the progress of this vast system prior to de-nationalisation. Technical details of the lorries dealt with are summarised in specification tables at the end of the booklet.

"THE SEASHORE FOR BOYS AND GIRLS"

By Philip Street

(English Universities Press 7/6)

The seashore is not only an excellent place for paddling or for building castles in the sand, but is also a rich hunting ground for the young naturalist interested in the fascinating variety of small creatures and marine growths to be found there. Such enthusiasts will delight in this excellent book.

Many aspects of seashore life are dealt with, from seaweeds to barnacles, sea-anemones and their relatives, crabs, mussels, shrimps and so on. Then there are the sea-squirts and sea-mats, the boring animals like the ship-worm and piddock, and that extraordinary creature the octopus. Finally the author devotes a chapter to the plankton, the minute animals and plants which drift with the currents and tides and provide the food for so much of the animal life of the seashore.

The text is prefaced with a very useful list of the scientific terms, with their meanings, used in the book, and the many half-tone illustrations and line drawings are excellent.

"AIRCRAFT RECOGNITION ANNUAL"

By C. H. Gibbs-Smith (Putnam 10/6)

The visual recognition of aircraft will always be important in both peace and war. It is essential for airport officials, Service personnel, and men in the Royal Observer Corps. It proves an excellent form of training in powers of observation for anyone who cares to tackle it seriously, for the development of jet aircraft "with such visible features as intakes and jet-pipes bearing no relation to the actual number of engines they serve" has made accuracy and speed on the part of "spotters" more necessary than ever.

On the basis that "recognition is a question of knowing shape, not facts," this book provides half-tone illustrations of over 200 types of civil and military aircraft of many nations, including Russia, with, in most cases, details of dimensions, type of engine, crew capacity and speed. There are specially drawn 3-view silhouettes of 80 basic types, with a good description of the appearance of the machine concerned.

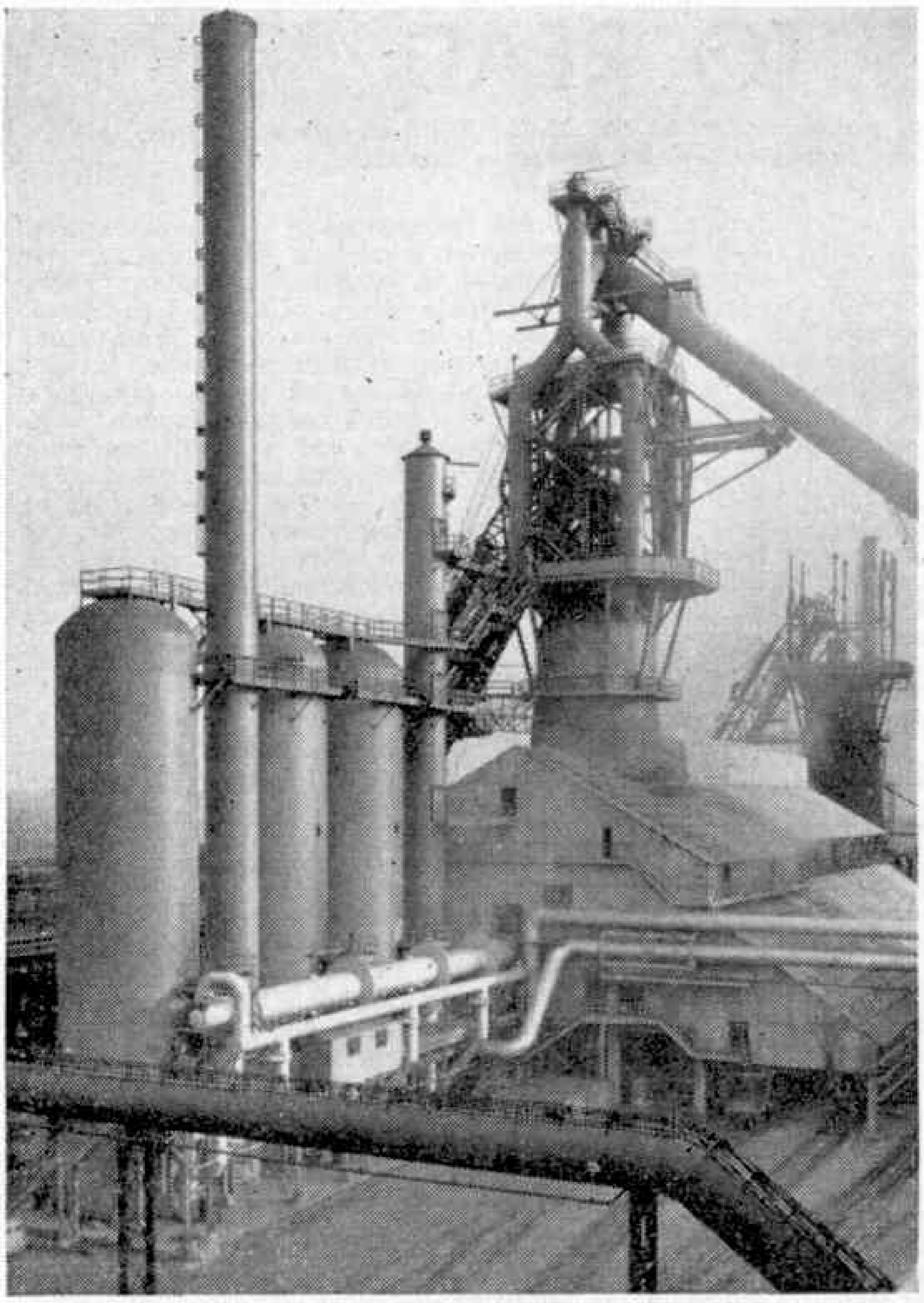
"TRAINS ALBUM"

No. 4 Southern Region

No. 5 Scottish and London Midland Regions

(Ian Allan 1/6 each)

These Albums carry on the good work of their predecessors already introduced in these pages, providing railway enthusiasts, whether young or old, with much interesting material. Trains of all kinds figure in the illustrations, some of them caught from unusual angles by the cameras of the various photographers responsible. There is plenty of variety, ordinary everyday trains getting a good showing as well as their better known relations.



Queen Anne, one of the two giant blast furnaces blown in this year at the works of the Appleby-Frodingham Steel Company, Scunthorpe.

Queen Anne and Queen Victoria

HERE is a very strange title, but the article it heads is concerned, not with history, but with the most modern ways of smelting iron. Queen Anne and Queen Victoria indeed are giant blast furnaces, recently built at Scunthorpe by the Appleby-Frodingham Steel Company. Actually there are four Queens in the extensive works of this company, the others being Queen Mary and Queen Bess, and between them they are capable of producing about 1,400,000 tons of pig iron per annum.

Queen Mary and Queen Bess were put down in 1939. They are large furnaces, with a hearth diameter, originally of 22 ft., that later was enlarged to 25 ft. After the war the company embarked on a gigantic scheme of modernisation to improve the technical efficiency of all operations and to increase the output of pig iron. The most recent, and the largest, part of this scheme was known by the name Seraphim, made up from the initial letters of South ironworks Extension; the companies engaged in the constructional work; and the Christian names of Mr. Kemp, the Chief Design Engineer of the Appleby-Frodingham Steel Company. The scheme involved the construction of two new and larger blast furnaces, and it is these that are known by the names in the heading of this article. By the time that it had become possible to build them the advantage of hearths of greater size had been realised, so that Queen Anne was given one of 27 ft. and Queen Victoria, the latest of the four, originally planned to have a hearth of the same size, has been built with one 28 ft. 6 in. in diameter. It is expected that Queen Anne's hearth too will be made 28 ft. 6 in. in diameter on re-lining.

The purpose of a blast furnace is to make pig iron from iron ore. The furnace itself is a high one, as our illustrations of the two latest Queens show. Iron ore and coke are hoisted in skips to a platform on top of the furnace, and are dropped into it through a bell hopper, which is lowered when a charge has to be introduced and raised to seal the mouth of the furnace as soon as this has been done.

In the lower zone of the furnace the mixture of ore and coke is made white hot by blowing through it air heated by passing it through stoves containing a checkerwork of bricks that are alternately heated by means of burning gas and used for heating the air blast. This hot air enters low down on the sides of the furnace through tubes called tuyeres. At the high temperature the iron ore is reduced to the metal, which of course is in the molten condition, and at the same time slag is formed. The iron is tapped near the base of the furnace, and the slag is removed through an opening higher up.

It will be seen that what goes on in the blast furnace is a continuous operation. Ore and coke are fed in at the top and become heated as they descend, and molten iron and slag are withdrawn at the bottom. A large quantity of gas is produced, and this is led away through the long wide pipes sloping down from the top of the blast furnaces. Part of it is used for heating the blast of air passed into the furnace, and the rest finds uses elsewhere in the plant.

The Queen Victoria furnace is 121 ft. 3 in. in height to the bell platform, where charging takes place, and from the ground to the top of the ducts through which the gas produced is taken away the full height is 224 ft. 3 in. The furnace hearth bottom, with a thickness of 5 ft. 4 in., is made of blocks of carbon, which are placed over a firebrick layer that is 10 ft. in thickness. When the furnace is tapped the molten pig iron is run into ladles holding 70 tons, and the slag into smaller ladles with a capacity of 20 tons.

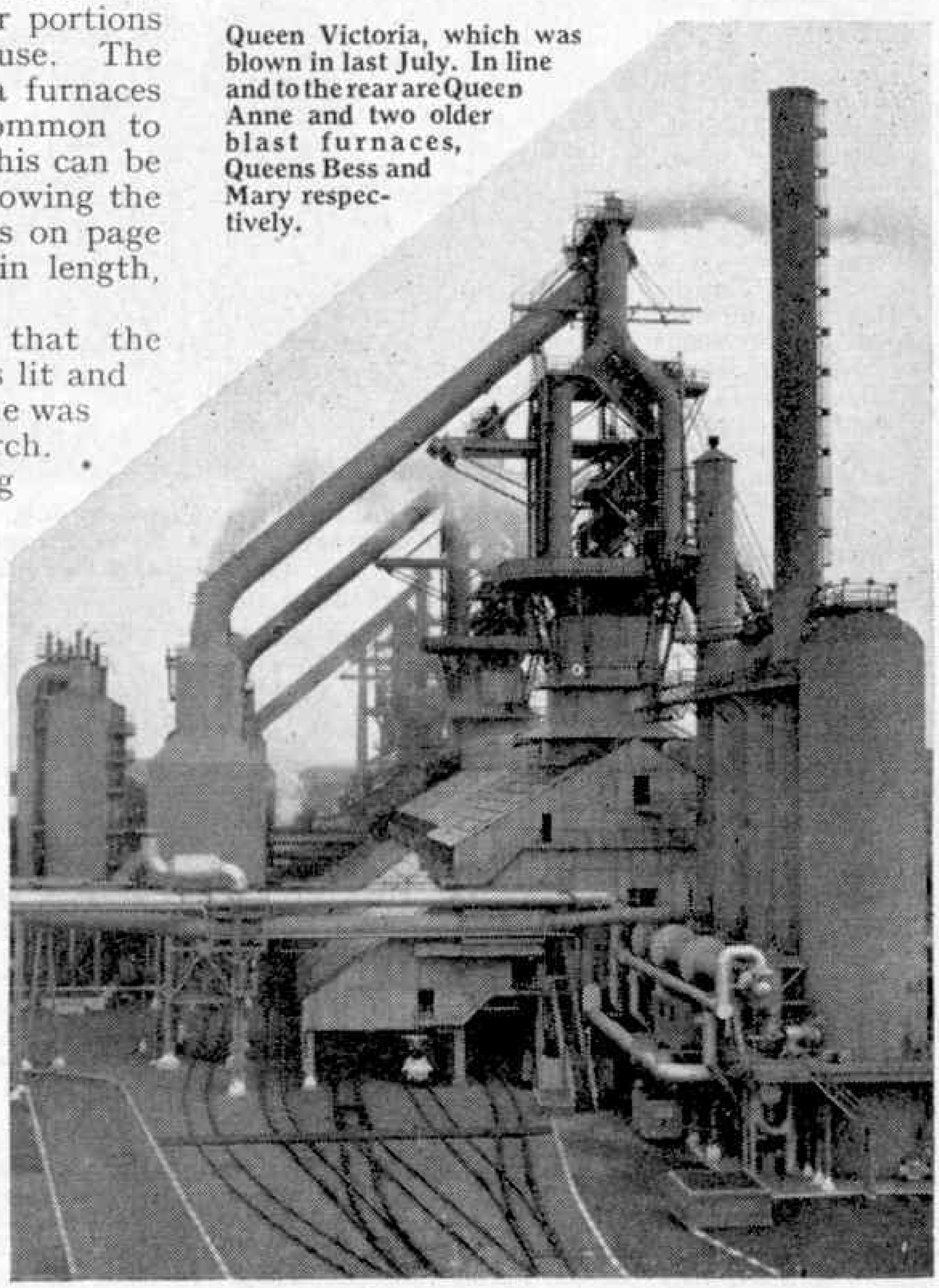
At Scunthorpe the four Queens are arranged in line, and their lower portions are enclosed in a casting house. The Queen Anne and Queen Victoria furnaces have a casting house that is common to them. Some idea of the size of this can be gathered from the illustration showing the foot of Queen Anne that appears on page 511. It is well over 100 yards in length, and is served by a 15-ton crane.

It was on 29th July last that the Queen Victoria blast furnace was lit and set in operation, while Queen Anne was commissioned in the previous March. Together with the already existing Queens, their bringing into service represents the completion of the Seraphim scheme, by which the output has been increased to the present figure from the 900,000 tons of pig iron per annum produced by the 10 smaller blast furnaces previously in operation.

Seraphim has included much more than the erection of the new giant blast furnaces, and in particular it has involved considerable research to make pig iron production more efficient. One reason for this was that the ore used, derived partly from Frodingham and partly from Northampton, is getting poorer in its content of iron. The problem has been solved by devising means of crushing the ore and "sintering" it, and of using the sintered product in the blast furnace instead of the ore itself. The output of iron has been increased and its quality improved as a result.

The sintering process calls for some explanation. In it the ore, crushed to a definite size, is mixed with coke breeze in carefully measured proportions. The mixture is then fed on to cast iron pallets or trays, each 6 ft. long and 2 ft. wide, that are taken on conveyors through the sinter machine. In this they pass under an ignition hood, in which there are burners, which use gas from the tops of the blast furnaces. The flames from the burners ignite the coke breeze, and the combustion continues as the pallets pass further along.

The effect of this preliminary treatment is to form a cake that is richer in iron than the original ore, for volatile material has been driven out. It is this cake, which is passed over screens to remove the pieces that are too small (*Continued on page 529*)



Queen Victoria, which was blown in last July. In line and to the rear are Queen Anne and two older blast furnaces, Queens Bess and Mary respectively.

Railway Notes

By R. A. H. Weight

Locomotive Stock Changes

The Britannia class 4–6–2 engines completed at Crewe last summer, numbered 70045–9, were allocated to Holyhead shed, and were provided with large tenders similar to those attached to the later L.M.R. Pacifics, so as to provide more fuel capacity on the Holyhead-Euston runs with the *Irish Mail*. At the time of writing no names had been announced for these locomotives, but the five now in course of completion, the first of the type to be stationed in Scotland, are being numbered and named as follows: 70050, *Firth of Clyde*; 70051, *Firth of Forth*; 70052, *Firth of Tay*; 70053, *Moray Firth*, and 70054, *Dornoch Firth*. Allocation to Polmadie depot, Glasgow, has commenced.

Ten more Clan class, smaller 4–6–2s, have been authorised for construction, to be numbered 72015–24 and carrying the following names: *Clan Colquhoun*, *Clan Graham*, *Clan MacDougall*, *Clan MacLean*, *Clan Douglas*, *Clan Gordon*, *Clan Hamilton*, *Clan Kennedy*, *Clan Lindsay* and *Clan Scott*.

Class 5 4–6–0s have been built at Derby for the Scottish Region, continuing a series, numbered 73059–61. Class 4 2–6–4Ts from Brighton Works have gone to Bury Lancs., 26D shed, numbered 80087–90; No. 80091 to Kentish Town, 14B. The latter engine was running-in on trains from Brighton and Eastbourne about the middle of September. Built at Darlington, Nos. 78028–9 of the small class 2 mixed traffic 2–6–0 type were allocated to 15C, Leicester; No. 78030 to 10B, Preston. From Derby 0–6–0 diesel shunting locomotives numbered 13056 to 18A, Toton, and 13057–9 for 15A, Wellingborough, entered service.

Standard 2–6–0s of the B.R. class 3 type continue to appear from Swindon with tenders of 3,500 gallons water capacity; Nos. 77015–9 have been turned into traffic for operation in the Scottish Region. No. 9494 0–6–0 pannier tank has been received by the Western Region from the Works of the Yorkshire Engine Co. Ltd.

Eastern Region Circular Tours

From King's Cross we set off by the 11.55 a.m. Garden Cities and Cambridge buffet express behind reboilered Sandringham 4–6–0 No. 61657 *Doncaster Rovers*, enjoying some smart accelerations and uphill work, and maximum speeds over 70 m.p.h. between stops. There was good opportunity as we passed at low speed, essential just now, of viewing progress of the extensive track widening, station and bridge rebuilding etc. works at Potters Bar, still in hand. At Hitchin before leaving the main line we were passed by the down *Queen of Scots* headed by A1 *Patrick Stirling*.

The survivors of the once numerous G.E.R. Intermediate class, now known as E4, are the only 2–4–0 tender engines at work in this country. No. 62784, smartly turned out, took us in good style across the interesting, truly rural single-track route to Mark's Tey, Essex, by way of Sudbury, Suffolk, and thence into Colchester with a maximum speed of 56–57 m.p.h. on the final stretch along the East Anglian main line. On the branches my friends and I saw J15 and J17 0–6–0s, a 2–4–2T, another 2–4–0 and a rebuilt Claud Hamilton 4–4–0, all of Great Eastern origin, and two class 2 2–6–0s working the Colne Valley branch. By stages back to Liverpool Street we travelled behind *Arsenal*, one of quite a selection of B17 or Sandringham type 4–6–0s observed, then behind *Hereward the Wake* after watching a busy time with steam and electric trains at Shenfield, the junction for Southend-on-Sea. Other Britannias seen included *John of Gaunt* on the down *Broadsman* and *John Bunyan* and *Rudyard Kipling* on other Norwich expresses. The locomotive list also included a L.M.S.-built 4–4–2T, a class 4 standard 2–6–0 and a large J19 0–6–0. Everything seemed to be running to time or practically so.

In a special weighing 330 tons, full of enthusiasts, organised by *Trains Illustrated*, we set off from Liverpool St. behind the pioneer 70000 *Britannia* for Norwich. After an interval there, we went on to the fine scenery of north-west Norfolk, reversing at Cromer Beach station, which now handles all that resort's trains, for Melton Constable, with newly painted B1 No. 61113 in charge. Coming on at the other end there was B12/3 4–6–0 No. 61530 for more entertaining travel over erstwhile joint lines, with tablet-catcher-fittings allowing fairly fast passage of passing places on single line. From Sleaford to King's Cross, via Barkston Junctions, not stopping at Grantham, A1 No. 60136 *Alcazar* provided the motive power, but as on the outward London-Norwich run, opportunities for high speed were short as there were a good many delays due to engineering work and signals.

* * * *

On exhibition at Eastleigh Works on the occasion of an "open day" during the s nmer holidays were the preserved L.S.W.R. 4–4– No. 563 and the yellow L.B.S.C.R. Terrier tan *vhill*, both towed from Salisbury by a West C Modern Pacifics and standard locomotives seen.

A Luton train near Elstree, hauled by B.R. Class 4 Standard 2-6-4 Tank locomotive No. 80045, photographed by E. R. Wethersett. This class is the prototype of the new Hornby-Dublo model described on page 548.

Strangers! The pioneer large-boilered G.N.R. Atlantic No. 251 and a G.C.R. Director 4-4-0 "Prince Albert," passing Earlestown East Junction, on the way to Liverpool with the Northern Rubber Special referred to in the accompanying paragraph. Photograph by R. Whitfield.

G.N. Atlantic in Liverpool

Saturday 4th September last was a memorable day for many railway enthusiasts. On that day a special train was run for the Northern Rubber Company from Retford to Liverpool (Riverside), hauled by Ivatt Atlantic No. 251 and ex-Great Central Director 4–4–0 *Prince Albert*, now No. 62663 of class D11. The rolling stock provided included the well-known "Beaver-Tail" observation car once used on the *Coronation* train. On arrival at Edge Hill two ex-L.N.W.R. 0–8–0s took over for the run down to Riverside via Waterloo Tunnel.

The two special engines spent a good part of the day at Edge Hill shed and were visited by many people, including a Stephenson Locomotive Society party. The centre of attraction was, of course the bright green No. 251, which was built in 1902 and retired in 1947, and has since been restored to its original condition. The Great Central engine seemed rather neglected, possibly because many engines of her class are still in regular service. Although in unlined black livery, *Prince Albert* presented a smart and pleasing appearance, with the side rods painted red and the nameplate similarly painted, with the lettering done in white

It was a rare and wonderful sight to see a G.N.R. Atlantic among L.N.W.R. 0–8–0s and various engines of L.M.S. standard design, and hordes of enthusiasts turned out to witness the spectacle of these locomotive guests far from their native ground, although both classes have worked to Liverpool over the C.L.C. route. The sight of the two L.N.W.R. 0–8–0s bringing the train up from Riverside for the return journey, with the *Coronation* observation car right behind them, was one that could not even have been dreamed about a few years ago.

(J.W.G.)

Britannia class ... 70004 William Shakespeare being prepared for G... Arrow duty at Stewarts Lane. P...h by R. Russell.

Southern Tidings

A lone engine of its type, and the only survivor of the small dock shunting series of locomotives built over 50 years ago to order of the original owners of Southampton Docks, No. 30458 *Ironside*, an 0–4–0 saddle tank in recent years employed at Guildford shed, has been withdrawn for scrapping. E5x No. 32401 is also condemned, leaving the three similar rebuilt 0–6–2Ts still on the active list at Horsham. Nos. 82020–5, class 3 2–6–2Ts, have been added to stock at Exmouth Junction, Exeter.

Hauling special trains conveying hop-pickers' friends on a busy Sunday evening in September from the Paddock Wood and Tonbridge area to London Bridge by way of Orpington or Oxted and Croydon, I saw King Arthur 4–6–0s, a U1 2–6–0, two Wainwright C 0–6–0s and 4–4–0s varying from L1 to D class.

Two veteran 4–4–0s had charge of the R.C.T.S. special train, which had been making a tour of Kent that day, having started from Liverpool Street, traversing the Thames Tunnel on the outward journey and concluding the trip at another station in the city of London, Blackfriars, S.R. The leading engine was No. 31166, the only remaining E, coupled to No. 31737, class D, which looked especially smart. The latter locomotive has been seen a good deal on a Tonbridge duty to Brighton, thence to Redhill and back on the Sussex portion of the through Birkenhead trains, afterwards assisting a radial tank on the Lancing-Brighton workmen's train before returning in late evening to Tonbridge.

On the whole the heavy holiday traffic from Kent to Devon and Cornwall was well handled.

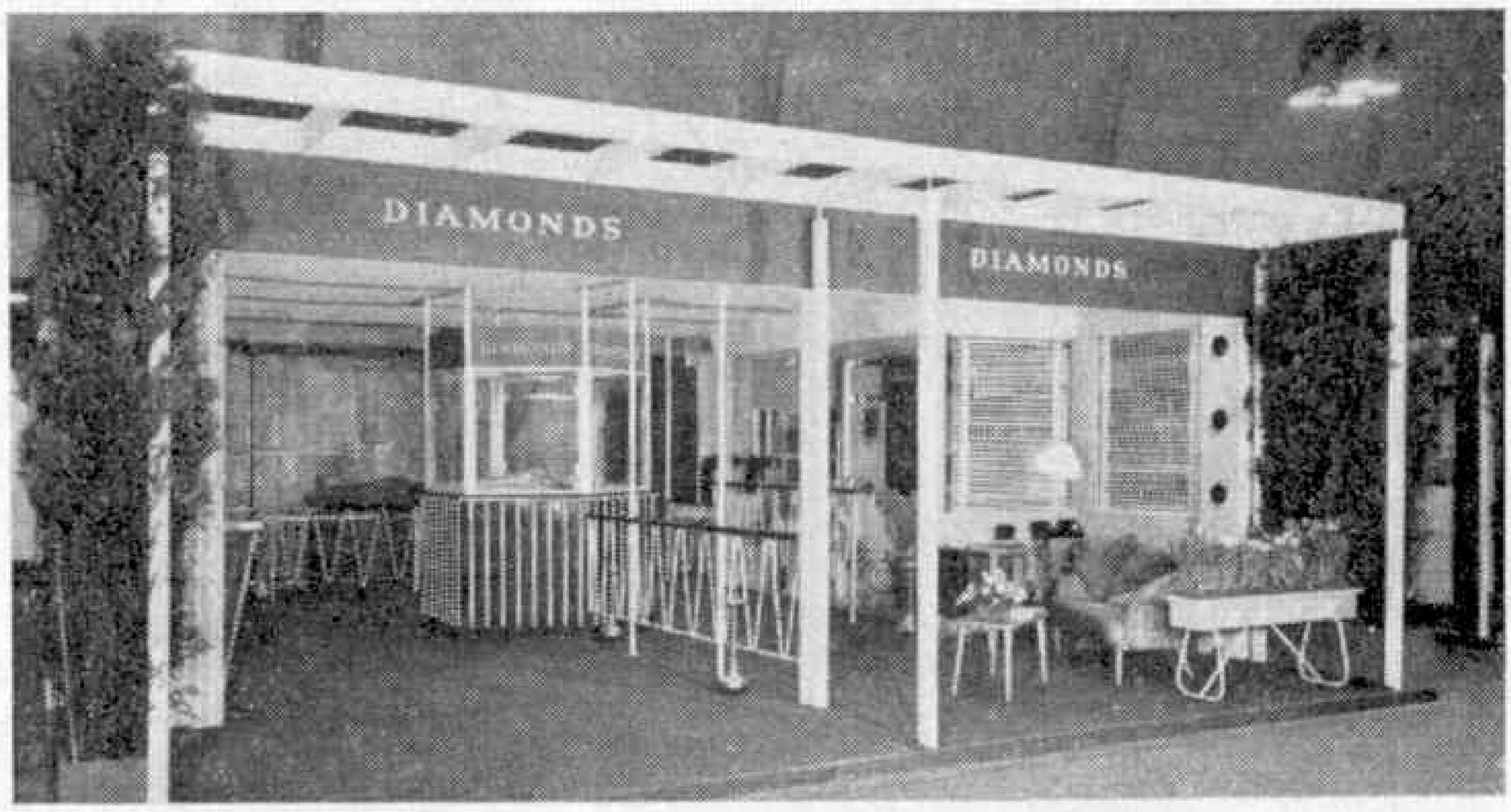
Traps for Burglars

By John Peters

ONE night two burglars forced a window in a kiosk in a famous London park. "Forced" is perhaps an exaggeration—the window had been absurdly easy to open—and the thieves no doubt told themselves, "What a cinch! Some people deserve to be robbed!" The time was 10.16 p.m. as they set to work to loot the shelves of tobacco and cigarettes.

It was barely 10.19 when spotlight torches flashed among the trees of the park and Flying Squad men were calling on the two burglars to come out. As the two disconsolate thieves were driven away they complained bitterly that one of their associates must have betrayed them.

"Some one 'shopped' us!"



Diamonds worth £1,000,000 on show at the Daily Mail Ideal Home Exhibition. They were well protected, as explained in the accompanying article.

ran their plaint. "We heard no alarm."

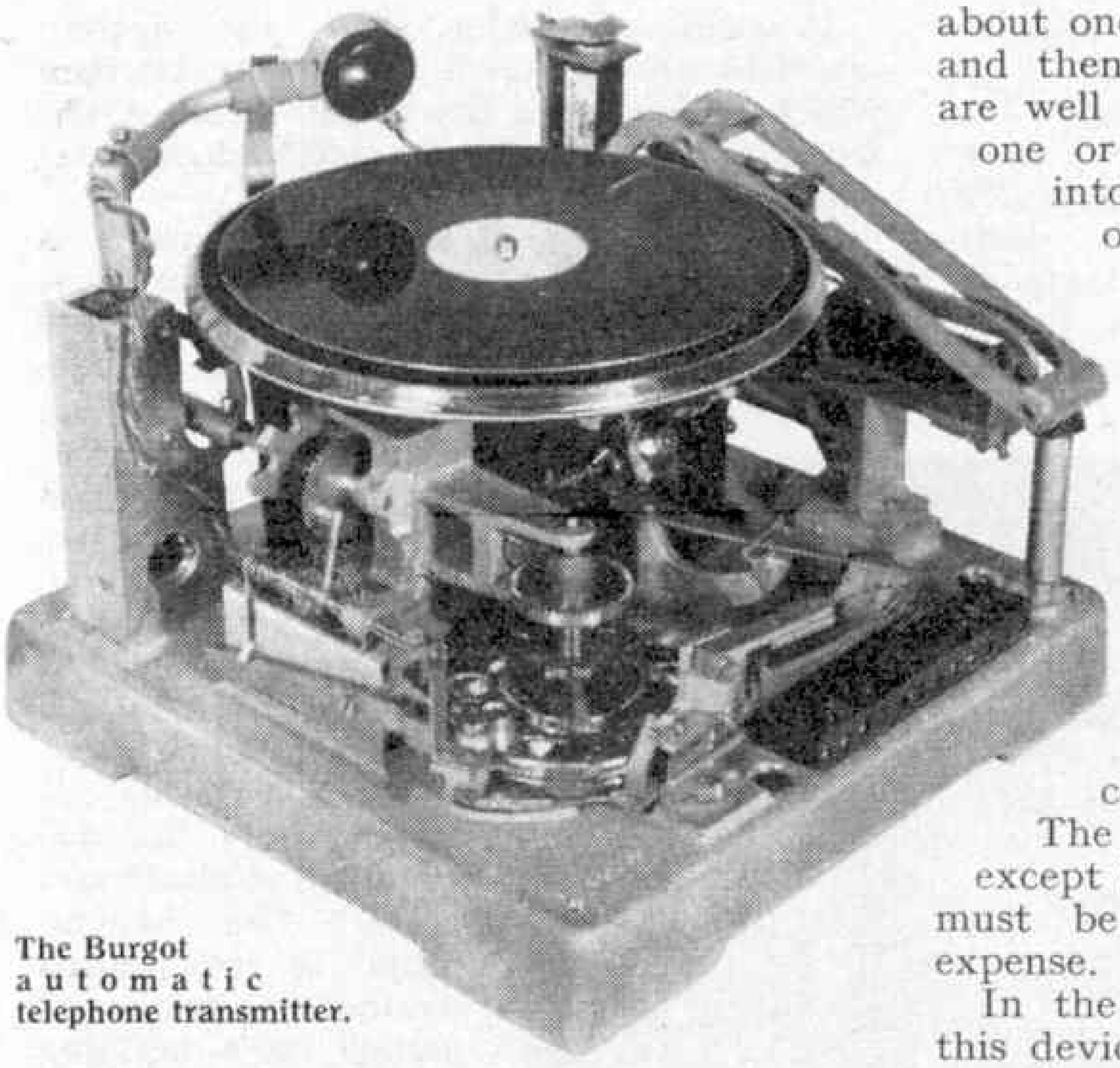
The Flying Squad men smiled quietly. They knew better. And if they had spoken their thoughts aloud it would have been to the effect that thieves never learn. Over 100 burglars have been caught at that kiosk during the last five years—all by a deadly, silent, automatic telephone burglar alarm. And—even more striking proof of its efficiency—three sets of thieves have been caught there in the one night!

What had happened when the thieves entered the kiosk was that one of them had trodden on a detector pressure pad concealed in a mat under the window. (It was one of a number of trap devices hidden in the building). The burglar's foot on the pad completed an electric circuit. This set in motion clockwork that engaged a telephone line. When dialling tone came on the line, the clockwork dialled 999 and operated a tone-arm in a sound-proof cabinet. The arm put a needle on a record, now revolving, and a voice began to sound over the telephone, "Police! Police! Burglars have broken into . . . ." and went on to give the name and address.

The recording went on repeating this message and would have done so for five minutes. Within half a minute, however, the telephone operator had switched it to the Information Room at Scotland Yard. One of the policemen on duty called up a Flying Squad car and it raced to the kiosk.

It reached there in less than three minutes of the thief treading on the detector pad. The arrest could have taken place even more swiftly had a Squad car been nearer—indeed, arrests have been made within a minute of the automatic burglar alarm being set off! And none of the many arrests due to the alarm have been made longer than four minutes afterwards. All business premises and every residence in London is within four minutes of a watchful Flying Squad car.

The automatic telephone silent alarm is the newest thing in protection against burglars in this country. First used here just before the war, it is rapidly replacing the older bell alarm, which may scare thieves away, but doesn't help capture them. Some 2,000 buildings in Britain are protected with the device and they include some of the most important. Among them are Buckingham Palace,



The Burgot automatic telephone transmitter.

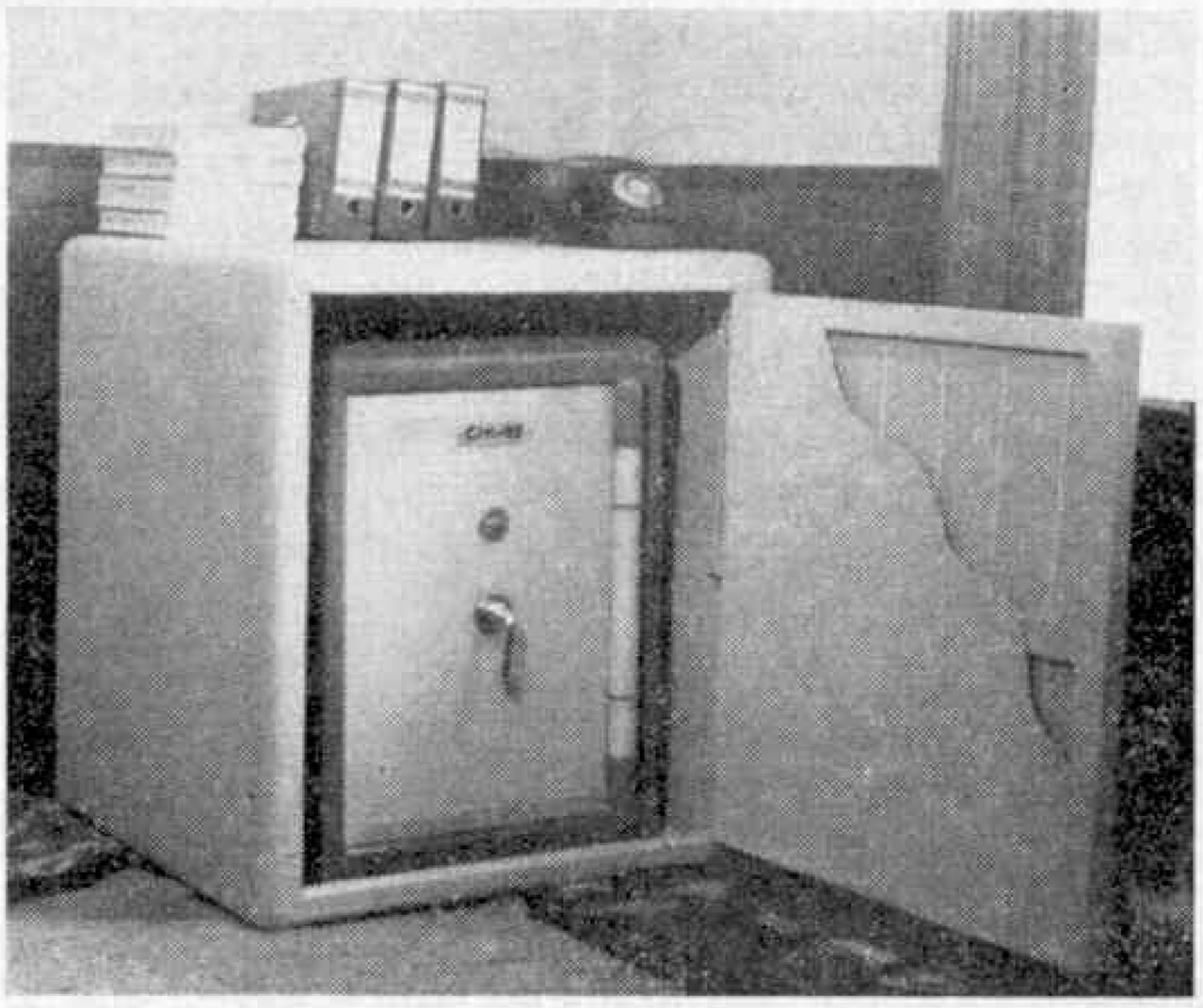
Windsor Castle, the Tower of London, the British Museum and other museums and galleries, the Bank of England, the General Post Office in London, several Whitehall ministries, some of the most secret defence stations . . . and the Crown Jewels.

Visitors to the *Daily Mail* Ideal Home Exhibition at Olympia this year had the unusual experience of being able to inspect diamonds worth £1,000,000 enclosed in what appeared to be an ordinary glass cabinet. The London firm of Burgot Rentals Ltd. was called in at short notice and asked to provide a means of protecting this fortune without the use of unsightly bars or grilles. The firm did it with the aid of detector pads under the carpets and invisible infra-red rays projected across the front. As a further safeguard, any attempt to break the glass would have operated the automatic telephone alarm and also set off a siren with a range of five-eighths of a mile!

The protection of a large building will cost £2,000 or more, but a small flat as little as £30. Generally, firms installing the automatic telephone alarm do not try to put a detection apparatus at every point of entry. Not only is this costly, but there is no need for it. Thieves will move about once they have entered a building, and then if the pads and other devices are well placed they are certain to trip one or more of them. Thieves broke into a Hampstead house on one occasion and set off six devices in the first three minutes. Besides pressure pads, devices may consist of concealed wiring in window bars and in doors and cupboards.

Popular belief is that infra-red rays are used extensively in burglar protection. Like a number of other popular beliefs it is only half true. Each infra-red ray costs £100 and in addition it has to be concealed in the brick or woodwork. The cost rules out infra-red rays, except in those instances where security must be assured at no matter what expense.

In the general run of installations of this device, London firms concentrate on guarding the valuables within the building. Thus the increasing number of attacks on safes has led the London firms that instal the automatic telephone alarm to devise a method of giving protection without the necessity of putting in a full-scale alarm system. A cupboard built round a safe, or a group of safes or filing cabinets, is fitted with an inner protective lining, so that any attempt to break through will operate the alarm. The door is similarly protected. In addition, the door is fitted



A safe may be enclosed in a cupboard fitted with a protective lining. The illustrations on this page and that on the next one are reproduced by courtesy of Burgot Rentals Ltd.

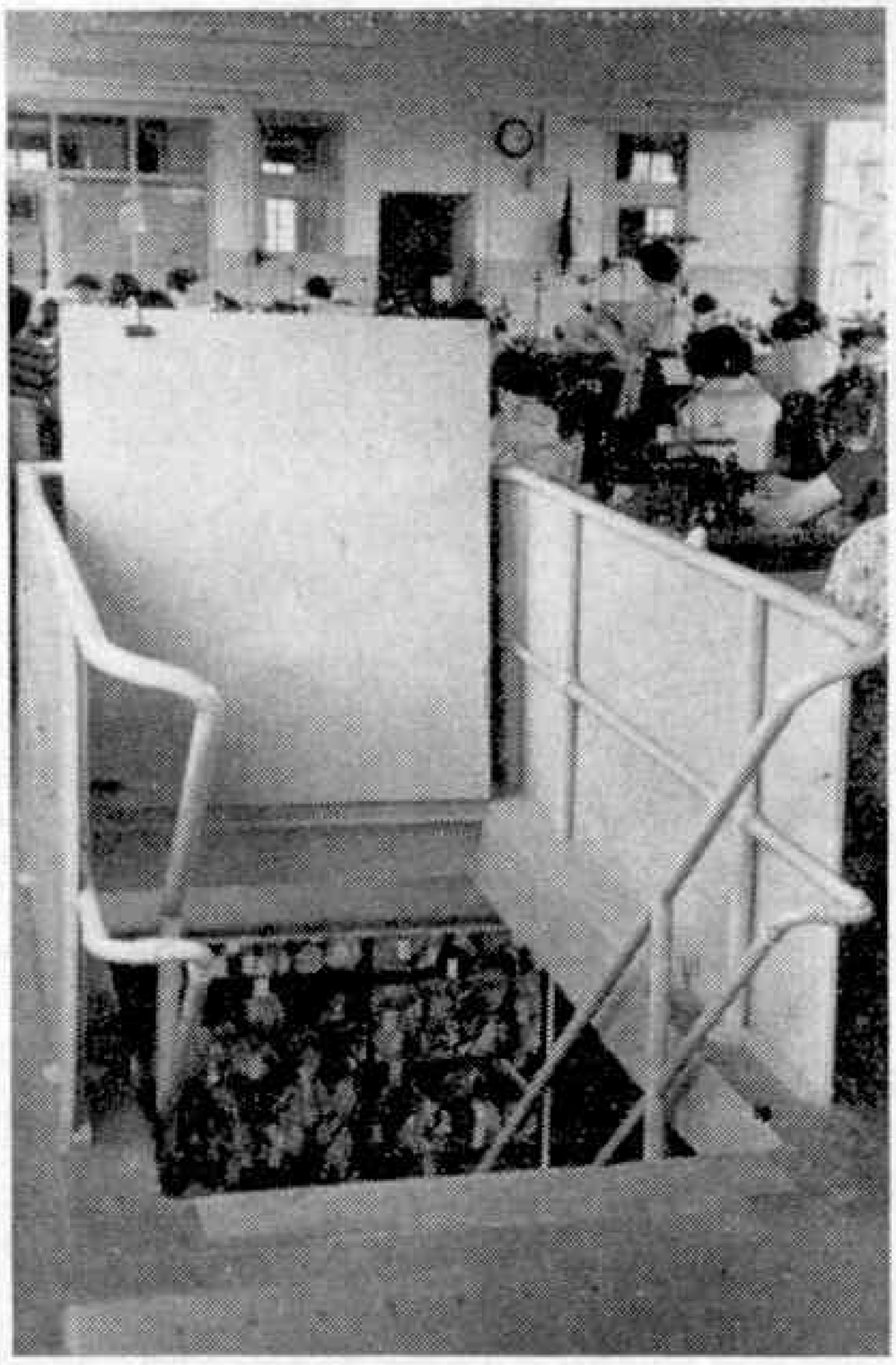
with electrical contacts that will operate the alarm if it is opened.

Modern safes and strong rooms are extraordinarily difficult to enter, but their doors have machinery of such complexity that an attempted entry can cause considerable damage. But the fitting of an external door with a protective lining can give early warning before the intruders have time to do much damage.

The sound-arm mechanism that sends out the alarm is the heart and brain of the system and in consequence is well protected with pressure pads and other contact devices to make sure that no thief can reach it before it has had plenty of time to send out its message. In addition, it is always well hidden.

One clever thief vowed he would beat the alarm, which in underworld circles has been nicknamed "the ghost voice." He had heard that the sound-arm mechanism was often concealed in grandfather clocks and in dummy medicine chests. (It sometimes is). He entered a flat and found three grandfather clocks — all genuine. The "heart and brain" was hidden under the stairs, but he hadn't found it before the police arrived and arrested him.

Another shrewd thief thought he had found the weak spot. The alarm went out on the telephone channel, didn't it? Well, all you had to do was to cut that where it ran along the outside wall of a jeweller's shop. He cut the wire and found the firm that had put in the alarm had thought of that one, too. The telephone channel was wired to the system in such a way that at the moment it was cut the sound arm-mechanism began working. It had been connected *ahead* of where the thief made his cut. He was telling himself how smart he was when the police arrived.



A security door installed in a factory to isolate one floor from another. Opening the door completes a circuit that operates the automatic telephone call.

Householders who have the system installed are provided with three buttons which will operate the alarm—one at the front door, one at the back door, and one under the bedroom pillow.

The deadliness of the device, which is greatly feared by burglars, is supported by the figures: one firm which has 1,600 installations has been responsible for the arrest of 950 burglars over the last five years: another with 1,000 installations has helped to catch 580.

When the automatic alarm has been touched off, engineers of the protection firms go immediately to the premises to check and re-set the alarm. This is to guard against a two-wave attack on a building by thieves—one to touch off the alarm and wait for the excitement to die down and the second to clean up. One night last winter a London engineer arrived at a building to be met by disappointed Flying Squad men. "We got here within three minutes, but the birds must have flown," they said. "We've gone right over the place with a curry comb." The engineer started on the check of the alarm. On a sudden impulse he walked over to a large steel cabinet and tugged out one of the drawers on its rollers. Crouched inside was a burglar. Hopefully he had leapt into the cabinet when he found the police had surrounded the factory, and had levered it shut by pulling on the back of the cabinet.

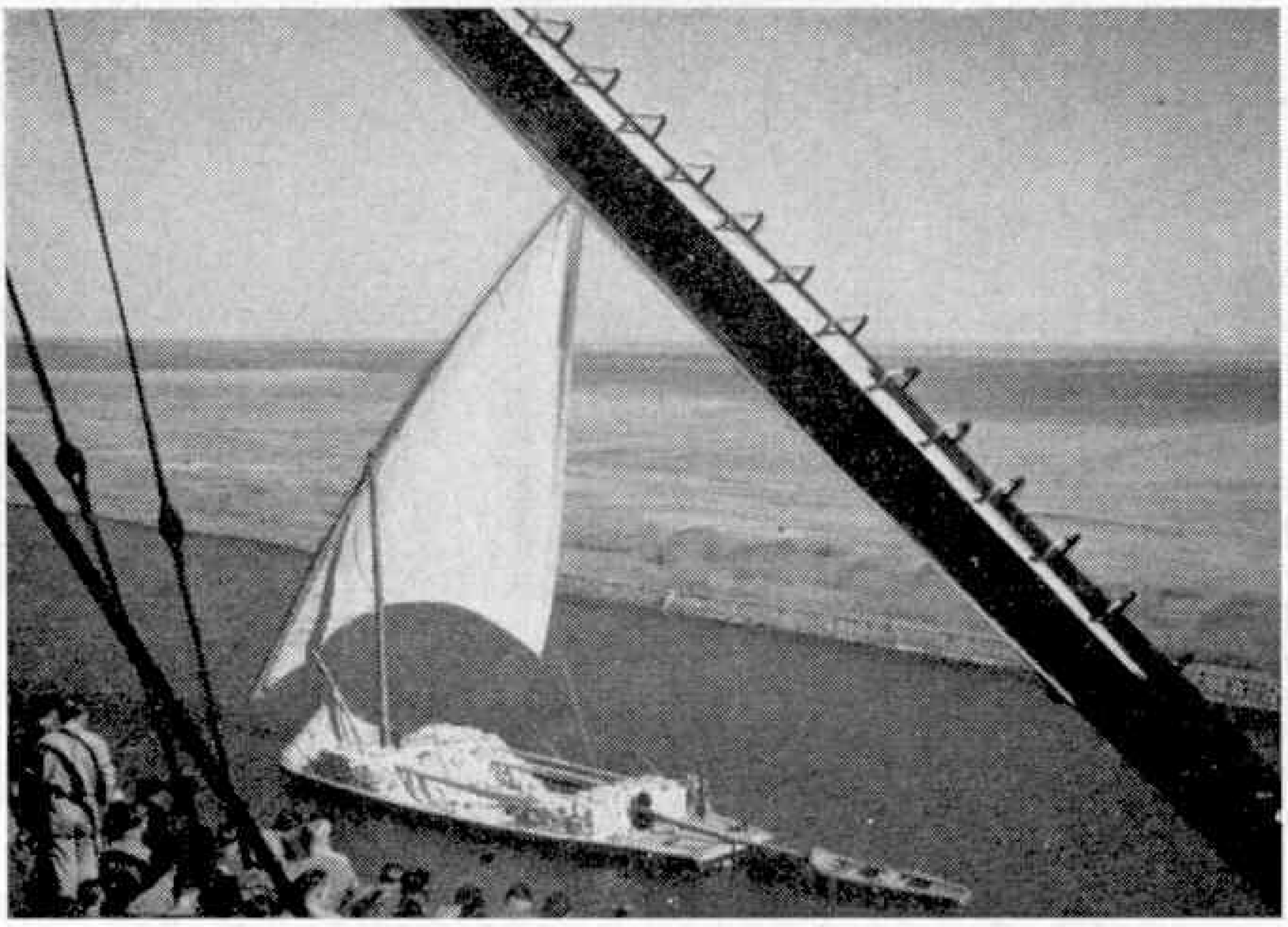
He insisted a little loudly that he was a lone operator. Large and sceptical policemen pulled out all the drawers and found two other burglars.

The ghost voice has even caught a policeman. He was on his beat one night and saw an open window in a factory. He climbed up to shut it—and set off the alarm. This British invention is indeed a deadly booby-trap alarm.

The Suez Canal

By E. Emrys Jones

EGYPT and the Suez Canal are much in the news these days, and Britain's diplomatic experts had many a headache before they found a satisfactory solution to the Egyptian Question. The position is a rather complicated one. Britain does not own the Canal, but occupied the base guarding it. On 11th November 1968 the 99-years lease granted to the Suez Canal Company, which constructed the Canal, will run out, and the Canal will then automatically become Egypt's property.



A native boat on the canal.

The present owners of the Canal are the Compagnie Universelle due Maritime de Suez, a truly remarkable company, with palatial head offices in Paris. The thirty-two directors of the Board are drawn from Britain, France, Holland, Egypt and the United States. Nine of these are British, France has sixteen directors, Egypt five and Holland and the U.S.A. one each. The appointment of an American director is a fairly recent one, deemed necessary because of the great volume of American traffic now using the Canal, particularly oil tankers.

It should be noted that Britain is the largest shareholder, holding over 40 per cent. of the shares, but France has the majority of directors. The chairman is also a Frenchman. A directorship is worth £5,000–£6,000 a year. Each director must be an expert on shipping, economics and international law. Britain's directors are chosen by the Government and by the shipping companies.

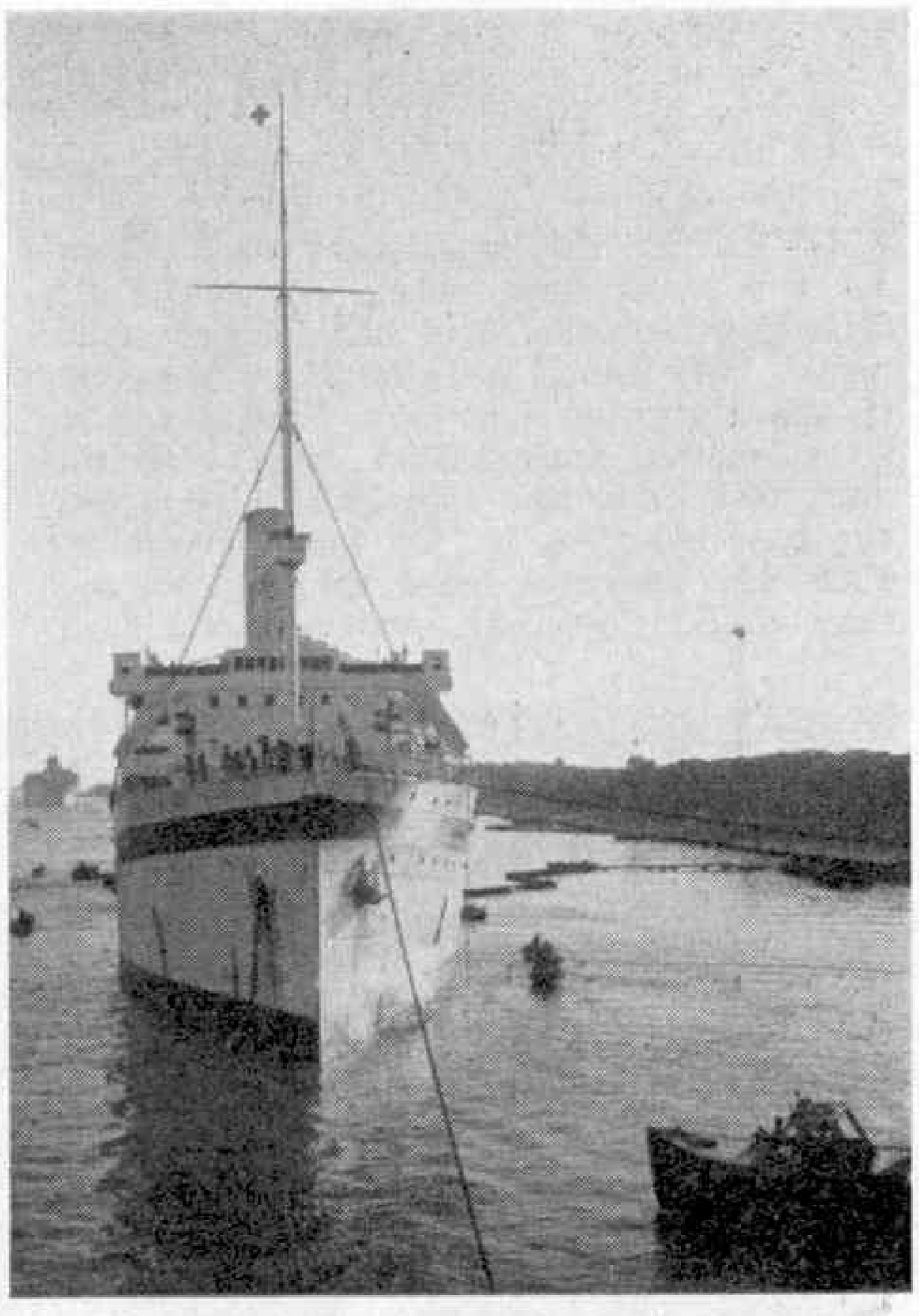
You can imagine the uproar that there was in Britain when it was announced that the government of the day had invested £4,000,000 in a foreign canal scheme! That was in 1875. Today the value is very much more than the four million pounds; indeed Britain has received over £70,000,000 in dividends for her 44 per cent. interest in the Company.

During the recent World War the Canal experienced lean times. If you remember we took practically all our supplies to our troops in Egypt and Libya "Round the Cape." Small-scale wars, however, have proved quite profitable in the past. Russian warships on their way to ultimate defeat by the Japanese, in the Russo-Japanese war, had to pay the usual dues, and during the Abyssinian war, Italy paid about £1,500,000 in dues as her ships went through the Suez Canal. Every ton of war material and every soldier was charged for at the normal fees for "cargo" and "passengers".

Since the War, there has been extraordinary expansion. In 1951 over 75 million tons of cargo was carried through the Canal. In 1931 the tonnage was 30 million tons, the main cargo being oil on its way from the Persian Gulf to Europe and the U.S.A.

The Canal Company is not concerned with political questions, but is, nevertheless, frequently affected by them. Like all good concerns, much of the profit has been

Officials on a pilot boat waiting to board a ship passing through the Suez Canal.



"ploughed back" into the business. For example, electric light was introduced and this made navigation by night possible.

The Canal has been widened and deepened several times. It is from 196 to 450 feet wide, while originally it was only 75 feet across. Other improvements have included the construction of a 7½-mile by-pass and deepening, to allow ships drawing 36 feet to pass. This of course cost millions.

The length of the Canal, including the passages through the Bitter Lakes is about 100 miles. Dredged channels in Port Said Roads, at its northern end, and at Suez, where it enters the Red Sea, add some six miles to the length of waterway maintained.

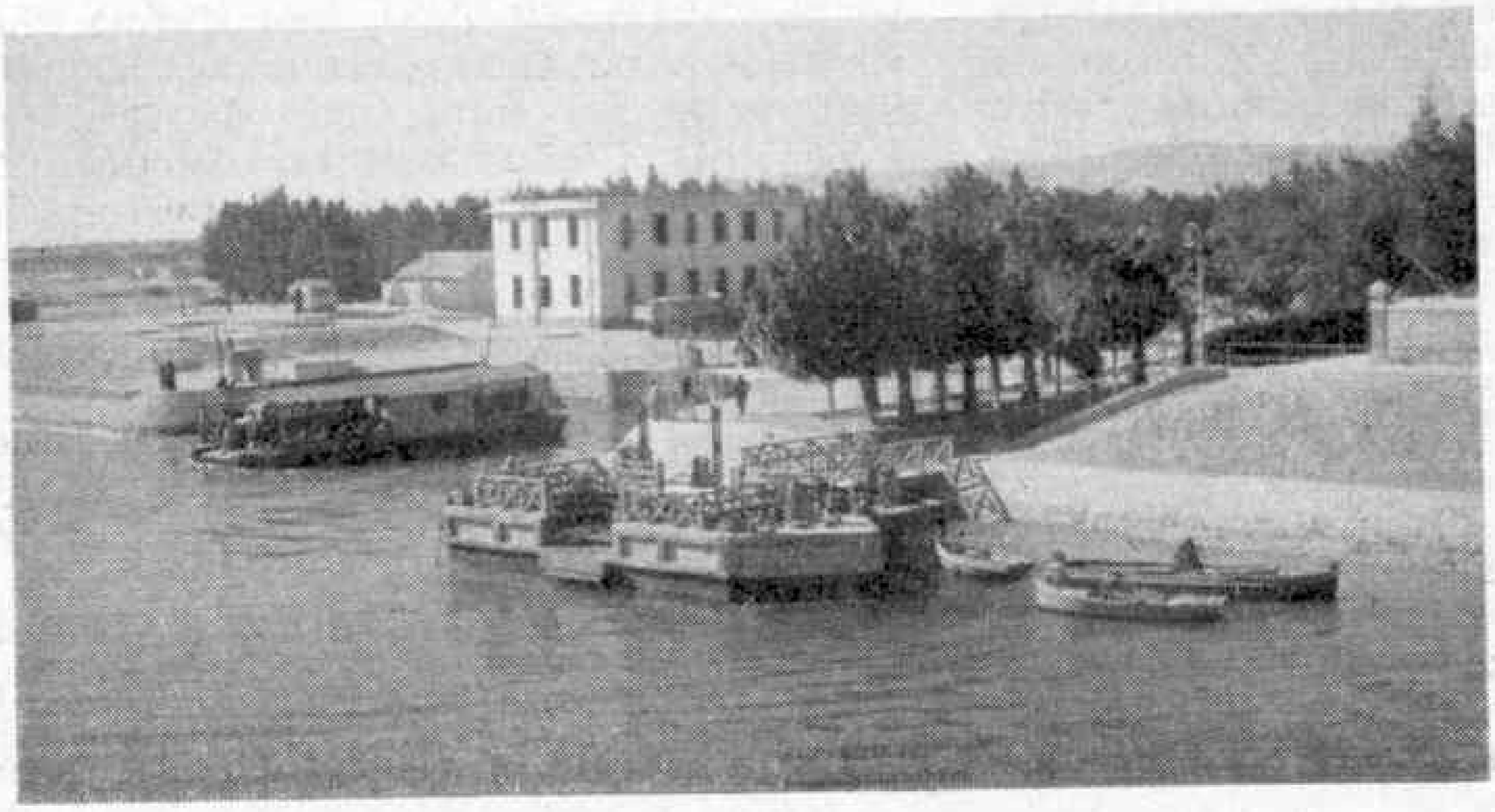
Passenger dues are charged on freight and on every passenger on board ship; freight charges vary, but each "passenger" costs a shipping company approximately 15/–. Pilots receive about £30 for each ship they take through. Traffic stations are erected at several points along the west bank. A road and railway also run along this side of the Canal. There are very few fish in the canal, but sharks have been seen passing through from north to south in search of warmer waters.

At the western gateway of the canal is Port Said, which has a population of 120,000, and a very fine harbour. Two well-known landmarks there are the statue of Ferdinand de Lesseps, the man responsible for building the canal, and the 180 foot lighthouse of one million candle power. The latter gives a guiding light that can be seen 20 miles away.

From Port Said to El Kantara, the canal runs due south together with the railway and the Sweetwater Canal. To the left is a swampy land called the "country of mirages".

Since time immemorial El Kantara, which means the Bridge, has been an important meeting place for caravans on their way to and from Palestine and Syria. It is quite probable that Abraham and his sons spent a few days at El Kantara on their way to Egypt.

Further on is Ismailia, a fine town of 25,000 population, a place that has frequently been mentioned in the news. It is there that the canal enters Lake Timsah, the Lake of Crocodiles.



A traffic station on the canal.

Leaving the Lake, the canal passes through what is regarded as the most interesting part of the journey. Cultivated land can be seen and a few palmgroves, and there are numerous ruins of bygone days. This is part of the Biblical land of Goshen, where the Hebrews were allowed to settle in the days of Jacob, whose son Joseph was right hand man to the Pharoah who then ruled Egypt.

There are also various monuments to commemorate deeds of valour during the defence of the canal in the first World War.

We now enter the Great Bitter Lake and after it the Small Bitter Lake. These were originally dry depressions; filling them with water took six months. At the entrance of the Lakes traces of the ancient canal of the Pharaohs have been discovered.

The town of Suez is at the southern end of the canal so that it forms its eastern gateway. It has about 40,000 inhabitants.

Small yachts sailing on the Bitter Lakes, through which the waterway passes.

Port Tewfik, at the end of the canal, is connected with Suez by rail. The Canal Company's Offices, harbour and docks are there.

But the story of the canal would not be complete without a glance at the Egyptian aspect of the question.

In the early days the Canal appeared unprofitable, so Egyptian investors sold their shares. Nevertheless, Egypt has had a good share of the profits—the Company pay them 7 per cent. of the gross profits, with a minimum sum of £350,000 (Egyptian) a year—and thousands of Egyptians find employment there. Ports, harbours and installations have been built. Before the canal was constructed, Port Said was just a small village, today it is one of the most important ports of call in the world.

Queen Anne and Queen Victoria—

(*Continued from page 521*)

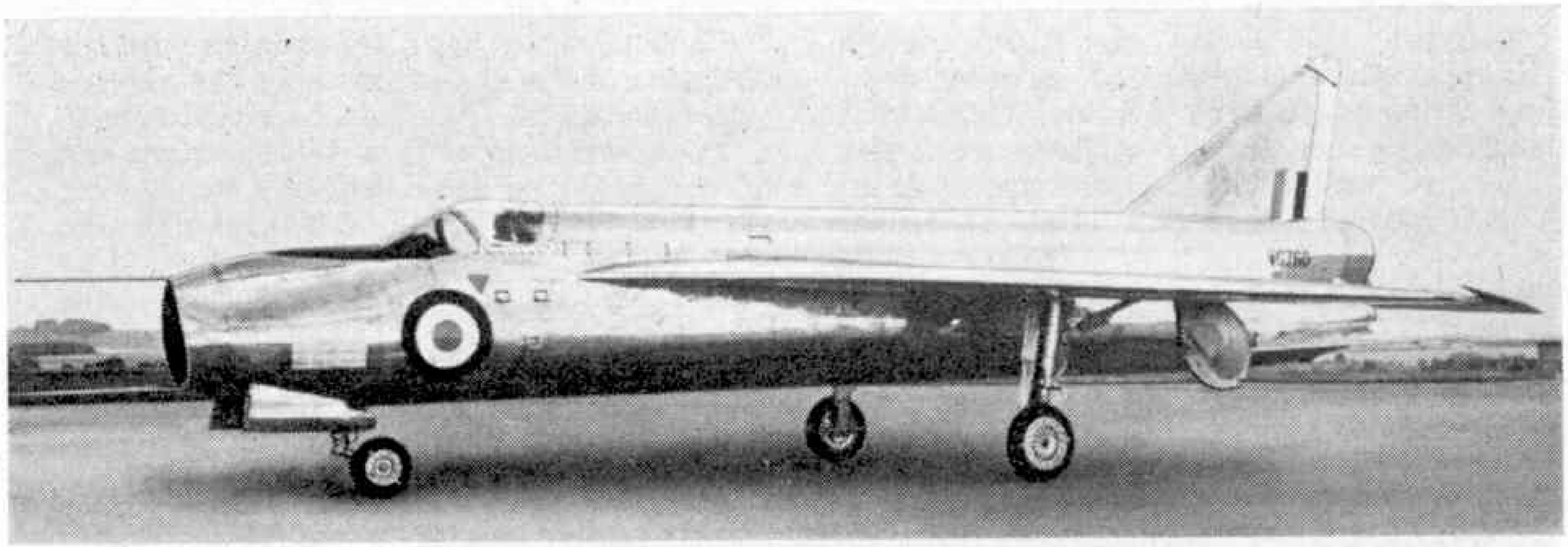
for blast furnace operation, that is fed into the furnaces together with coke. The latter must be of high quality, and much of it is actually produced in coke ovens forming part of the gigantic plant of the Appleby-Frodingham Steel Company.

Seraphim has included the creation of plant for crushing and treating ore, additional to that already in use, as well as turbo-blowers for providing air blast for the furnaces, cooling water in enormous quantities for many purposes, conveyors for transporting materials from one part of the works to another and yards in which to store them. Electric power also has had to be provided on an enormous scale, and recording instruments and automatic controllers have been installed wherever they can be used with advantage. The scheme has gone hand-in-hand with modernisation and extension on the steel production side of the Company's works. Altogether £26 million has been spent since the war on these developments, and new projects are already being planned.

America's First Jet Liner—

(*Continued from page 518*)

$400 million contract for 88 of the flight refuelling tanker version, which is named the Jet Stratotanker. So far, no orders have been placed by civil airlines for the Jet Stratoliner transport, which will differ from the prototype in several ways. But the U.S.A.F.'s large order will almost certainly have a profound effect on the attitude of U.S. airline chiefs towards the aircraft, because it not only reflects a great deal of confidence in the machine but will enable Boeing to quote a much lower "quantity production" price for each aircraft right from the start. So there is no doubt that we shall be hearing and seeing a lot of Boeing's Model 707 in the next few years.



The English Electric P.1 Supersonic Interceptor Fighter, the first British aircraft capable of supersonic speed in level flight. The P.1 signifies that it is the first aircraft designed by English Electric's Chief Engineer, Mr. F. W. Page.

Air News

By John W. R. Taylor

The English Electric P.1

When the prototype Canberra jet bomber flew in May 1949, many people wondered if it was sheer luck that the first aeroplane designed by the English Electric Company for a quarter of a century appeared to be a world-beater. Now, with the appearance of the English Electric P.1 single-seat jet fighter, they have their answer. It made its first flight on 4th August last, piloted by Wing Commander Roland Beamont, and looks like being every bit as successful as the Canberra.

The P.1 is not, as some newspapers would have us believe, the first fighter to fly faster than sound in level flight. The American Super Sabre and Skyray, and the French Mystère IVB and Gerfaut all preceded it; but its two Sapphire turbojets produce more power than the single engines of any of these fighters, and when details of its performance are released one day it may prove to be the fastest fighter in the world.

For the time being, however, it is so secret that the Ministry of Supply would not allow it to appear at this year's S.B.A.C. Display at Farnborough. So all we know about it is what we can gather from two not-very-informative photographs and an announcement that the Short S.B.5 research aircraft was built to test features of its design at low speeds.

Comparison of photographs of the two aircraft reproduced at the top of this page and at the bottom of the opposite page will show how much they have in common, and it seems reasonable to suppose that the P.1 has wings of similar shape to those of the S.B.5, which were made adjustable so that they could be tested at various angles of sweepback, starting at 50 degrees and then 60 and 69 degrees. At first the S.B.5's tailplane was mounted at the top of the fin; but later it was brought down to the same position as that of the P.1.

New Guided Missile

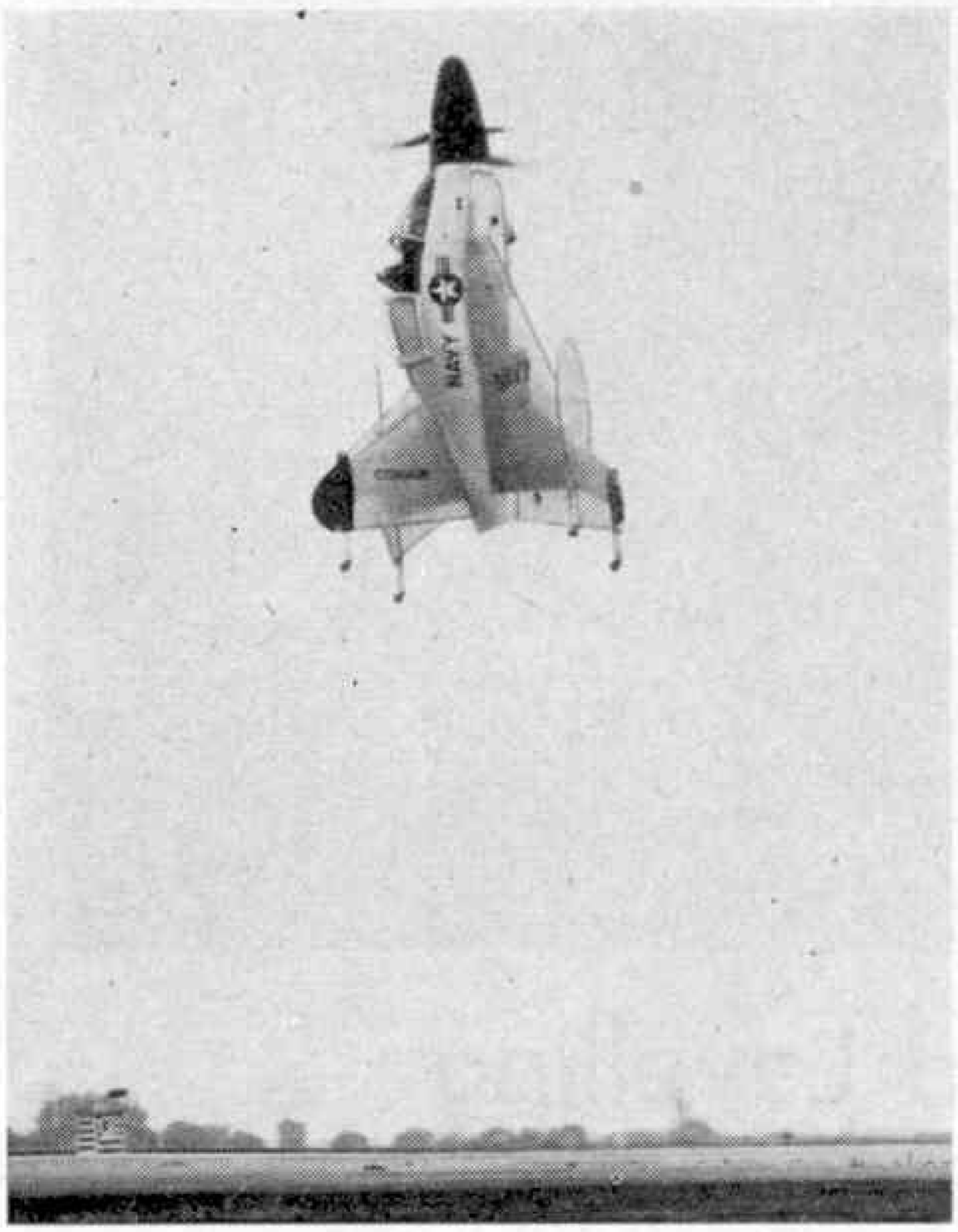
Just off the secret list is the U.S. Navy's Sparrow 1 air-to-air guided rocket, designed and built by the Sperry Gyroscope Company, in co-operation with Douglas Aircraft. Four of them are shown mounted under the wings of a Douglas F3D Skyknight twin-jet all weather fighter in the lower illustration on this page.

More than 100 prototype missiles were test flown between 1948 and 1951, before the robot controls and automatic guidance systems were considered good enough for full production. Deliveries of operational Sparrows to the U.S. Atlantic and Pacific fleets has begun, but no details of weight, performance or type of warhead may yet be given, beyond the fact that the missile is supersonic and that one hit or even a near miss would destroy any aircraft flying today.

Sperry Sparrow air-to-air guided missiles, mounted under the wings of a Douglas F3D Skyknight fighter. When launched, they travel at supersonic speeds and are guided toward their airborne targets. U.S. Navy photograph.

Viscount Success

With orders already totalling 154, there is no longer any doubt that the Vickers Viscount will be one of the truly great air liners of the next ten years. Following hard upon Capital Airlines' firm order for 40, with an option on 20 more, comes a repeat order from Trans-Canada Air Lines for another seven, to bring their fleet to a total of 22 by March 1957. Value of these two orders alone is nearly £22 million—in dollars. More important, Capital will be the first American domestic airline to use British equipment, and others will almost certainly have to follow or lose business to the comfortable, economical Viscounts of their competitor.



The Convair XFY-1 hovers above the Moffett Naval Air Station runway, on its historic first free vertical take-off. Photograph by courtesy of Convair.

Air France, who are getting 12 Viscounts, will operate them almost exclusively this winter on their European services. From the beginning of this month, they will replace DC-4 Skymasters on all routes except for German internal services, the Paris-Prague run and one of the five daily London-Paris flights.

156,000 Miles in 25 Days

A Canberra P.R.Mk.7 photographic-reconnaissance aircraft of R.A.F. Bomber Command has completed 300 hrs. flying in 25 days. It covered 156,000 miles—more than half the distance from the Earth to the Moon.

The object was to see how the aircraft and its Avon engines stood up to intensive flying, and to obtain accurate data on such things as fuel consumption, most effective cruising speed and camera functioning. The Canberra was flown in relays by four crews, and its engines were in such good condition after 300 hrs. that the trials were extended for another 100 hours. Throughout all this time no major servicing was required, no troubles of any consequence were encountered and no replacements were necessary.

V.T.O. Progress

Those of you who read my article on the U.S. Navy's revolutionary new vertical take-off fighters in the August *M.M.*, may be interested to know how they are progressing. Latest news is that the Convair XFY-1 has made several vertical take-offs at Moffett Naval Air Station, California, during which it has climbed to 150 ft. and then landed successfully tail-first, piloted by J. F. "Skeets" Coleman. The top illustration on this page shows the XFY-1 in the air after its first free vertical take-off.

The Lockheed XFV-1, which has now been named the "Salmon" after its test pilot Herman "Fish" Salmon, has so far made only orthodox horizontal flights with the aid of its stalky fixed undercarriage.

Meanwhile, the Minister of Supply has announced that contracts have been given to a number of British firms to undertake vertical take-off research, and has permitted publication of a photograph of Rolls-Royce's "flying bedstead" V.T.O. research machine.

Unique Rescue Operation

Helicopters of the U.S.A.F. were called recently to the aid of 262 railway passengers from the Southern Pacific's *Sunset Limited*, which was cut off when heavy rains washed out rail and road bridges near Langtry, Texas. After supplying them with food for a time, the helicopters were eventually used to evacuate passengers and crew.

Princess's Paintings Ferried

Although Princess Zeid of Iraq is not yet numbered among the great artists, her paintings are certainly great, as Silver City Airways discovered when they flew 31 of them from Ferryfield to Le Touquet recently. Two of the paintings were 18 ft. long and 6 ft. wide, and the seven crates containing the whole collection weighed nearly a ton.

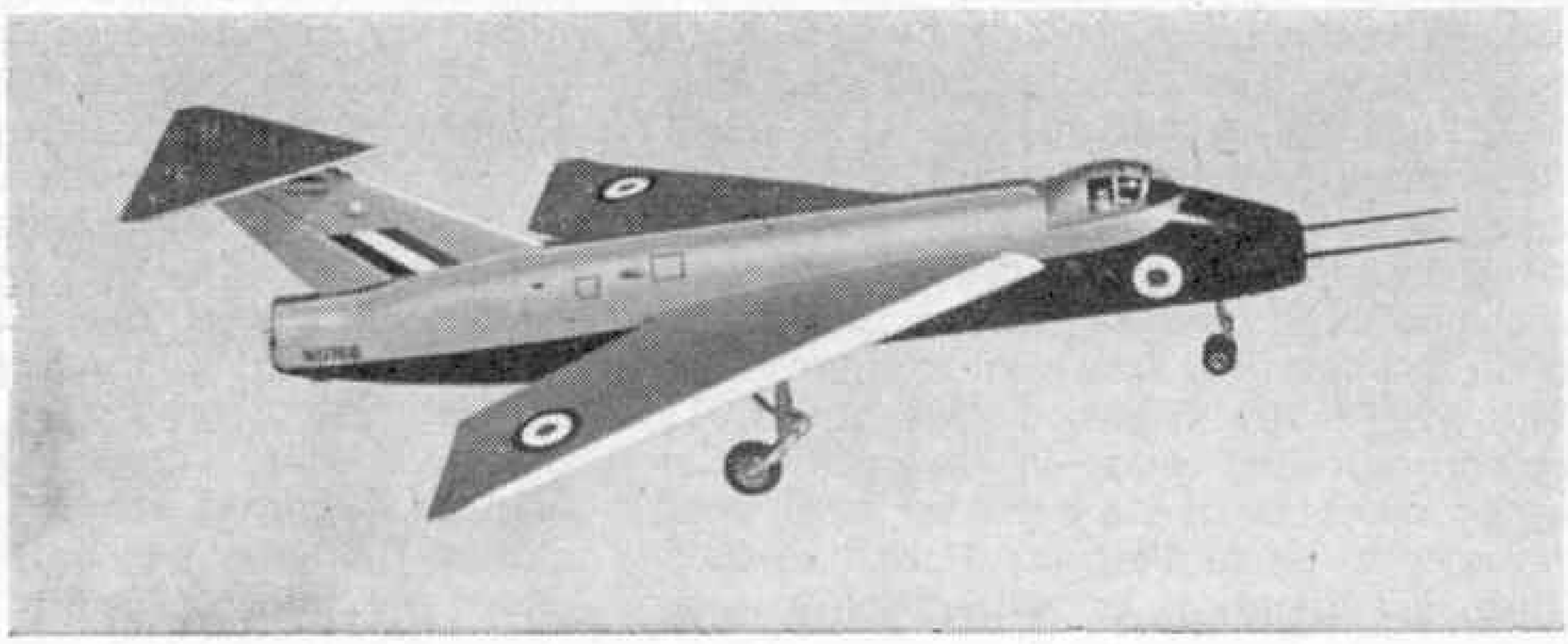
The paintings had been exhibited at the Institute of Contemporary Arts in London, where six other paintings by the Princess had been sold, one for £300.

Delta Bomber

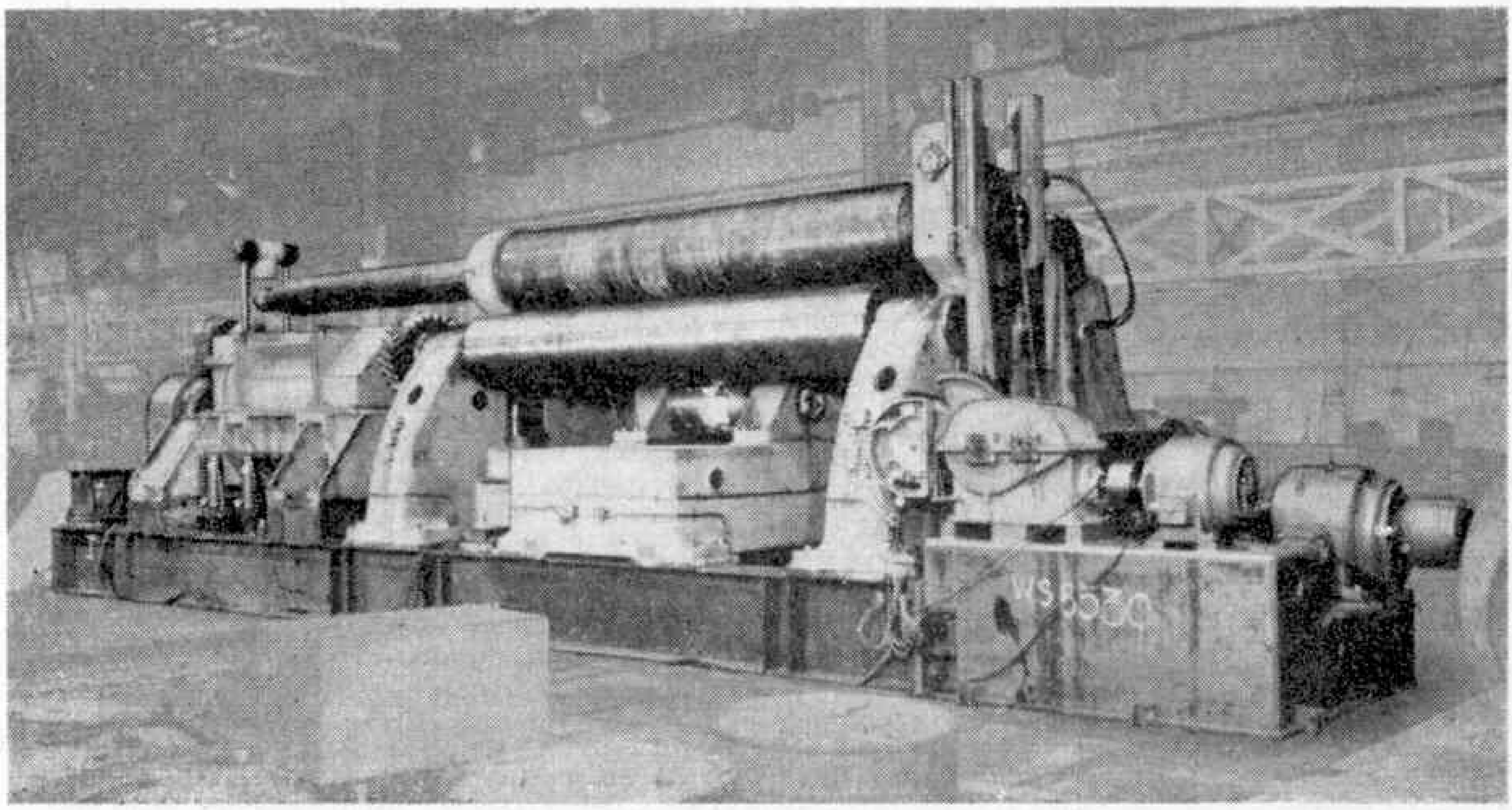
The U.S.A.F. have awarded Convair a production order for their big XB-58 Hustler delta-wing bomber, although it is still only at the drawing board stage. Four 15,000 lb. thrust General Electric J-79 or Pratt and Whitney J-75 turbojets, slung in pods under the Hustler's wings, are expected to make it supersonic in level flight. Initial development and construction will cost about £36 million a year.

U.S. Business 'Planes

So many American companies now have private aeroplanes to fly their executives around that the business aircraft fleet is 17 times larger than the combined fleets of all U.S. internal airlines. Latest statistics show that there are 21,500 business 'planes, of which 2,437 are multi-engined. During 1953 they flew 903,000,000 miles, compared with 525,164,996 miles by the Airlines.



Short S.B.5 research aircraft, shown here with the wings in 60 deg. position, and with the tailplane mounted at the top of the fin.



Bending and Levelling

Machine for Dealing with Heavy Steel Plates

BENDING heavy steel plates, and straightening them when they are uneven, are tasks that clearly call for massive and powerful machines. In one sense such machines are simple, for they consist of a series of rollers or rolls, as they are more usually called, placed to exert pressure on the plates as they are passed between them.

Examples of such machines on a small scale are those in which Hornby-Dublo rails are bent to form Curved Rails, and those in which such Meccano Parts as 12½ in. Strips are straightened. The Hornby-Dublo Curved Rails are formed by passing straight rails between two sets of rolls set on a curve. The 12½ in. Meccano Strips are straightened by passing them similarly between two sets of rolls, three in the upper one and four in the lower, these rolls of course being set in straight lines. The rolls in these machines are driven by electric motors.

The same principles are followed in the machines used for dealing with heavy steel plates, but they are very much larger and more powerful. One of them is illustrated on these pages. It has been designed and built by Joshua Bigwood and Son Ltd., Wolverhampton, and is probably the largest machine of its type to have been produced in Great Britain. It can be used either for bending or straightening, all that is necessary to change from the first to the second being the inclusion in the train of an extra roll, which is easily moved into position. The machine therefore is suitable for engineering shops that have not a sufficiently large output to justify the installation of separate machines for levelling and curving plates.

For bending, three gigantic rolls are used. They are arranged in the form of a pyramid, that is with one roll above and two below. All these rolls are 12 ft. 4 in. in length. The top one has a diameter of 2 ft. 2 in., and the two bottom rolls of the bending train are 1 ft. 10½ in. across. The extra roll used when straightening plates is slightly smaller, with a diameter of 17 in. and the supporting rolls are 18 in. The machine itself is over 41 ft. long and stands more than 12 ft. high. A further indication of its size is that its weight is 116 tons 2 cwt., the top roll alone weighing 13 tons 8 cwt.

The work that the machine can perform is of the greatest interest. It can take plates 12 ft. wide, and when these are of tensile mild steel they can be up to as much as 1¾ in. in thickness, while 45-ton tensile steel plates up to 1⅜ in. thick can be dealt with. These figures are also a pointer to the power of the machine. To gather this one has only to imagine the effort required to bend a large steel plate

measuring nearly 2 in. in thickness. When the machine is in action the plates are rolled forward and backward at the rate of 13 ft. a minute.

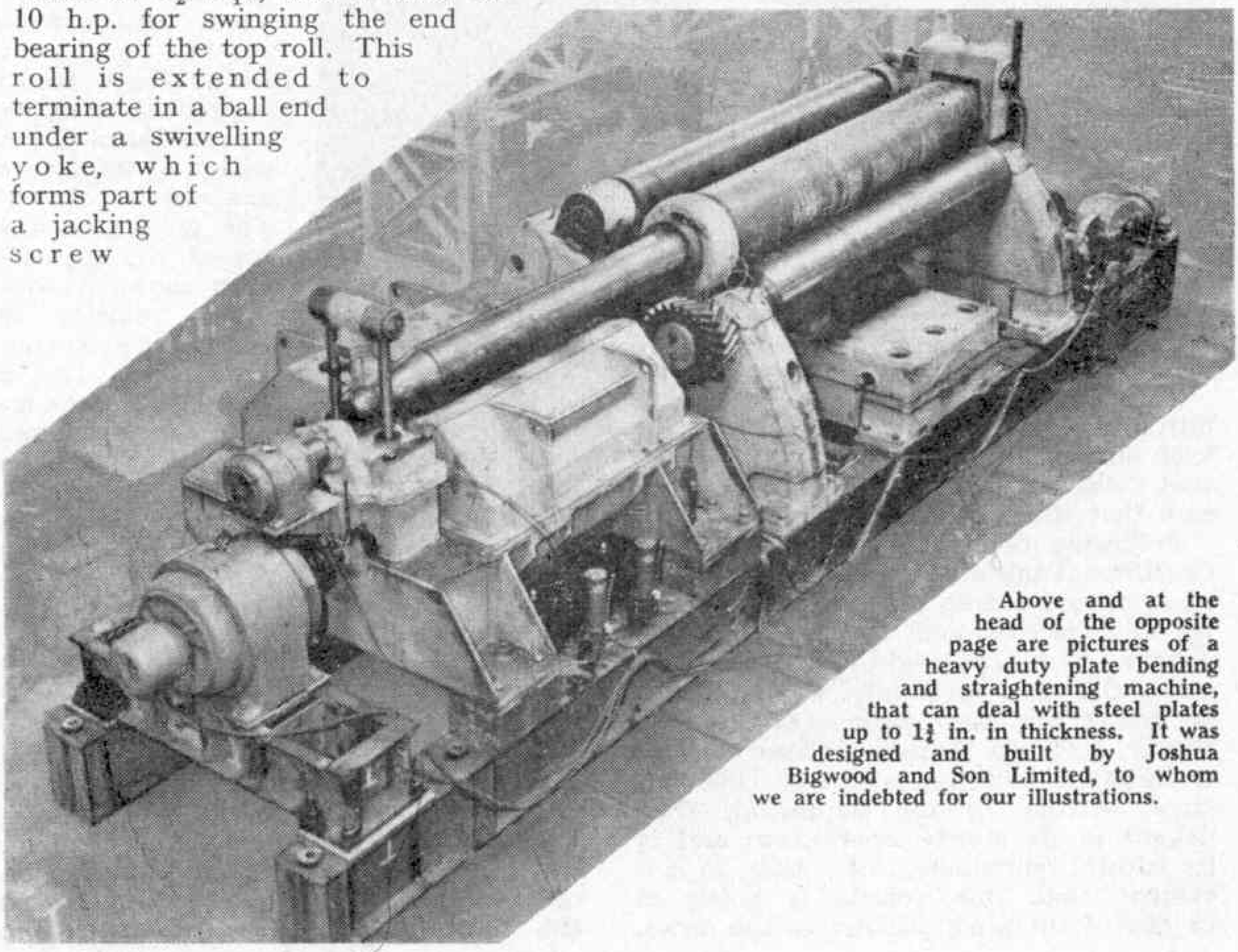
The rolls are machined from high carbon steel forgings, and the housings are heavy steel castings that carry the two bottom rolls in large phosphor bronze sleeve bearings. The top roll is carried in chocks working in slides machined in the housings between the lower roll bearings, and secured by thrust pins to heavy adjusting screws, which are used to position the top roller to produce the curve required when plates are being bent to shape. The levelling roll is carried in chocks, which are guided in inclined slides in the housings. When the machine is being used for bending, this roll is lowered out of the way, and it is raised into the position required for levelling by means of an electric motor.

The main motor of the machine is of 110 h.p., and there is another one of 50 h.p. that is used for adjusting the top roll. Three other motors are incorporated, the adjusting motor for the straightening roll, already mentioned, which is of 15 h.p., a jacking screw motor of 7½ h.p., and a third of 10 h.p. for swinging the end bearing of the top roll. This roll is extended to terminate in a ball end under a swivelling yoke, which forms part of a jacking screw mechanism used to balance the weight of the top roll, and so to relieve the pressure on the outer bearing when the housing of the roll is swung clear of the machine to allow closed circular forms to be removed from the rolls after bending. It is for this mechanism that the 7½ h.p. motor is used.

The main drive is connected through a coupling to the main gear box, which has helical steel gears. All bearing shafts and gears are so placed that the top part of the box can be removed for inspection purposes without disturbing any of the running parts.

When the machine is used for bending the rolls carry the plates round in circular form, the exact radius depending on the setting of the three rolls. The drive for the top roll vertical adjustment, however, includes a clutch operated by compressed air, and when this is disengaged the inner end of the roller can be moved independently of the outer end. Thus the top roll can be tilted, so as to produce plates bent into conical forms.

The machine is controlled electrically from a control desk.



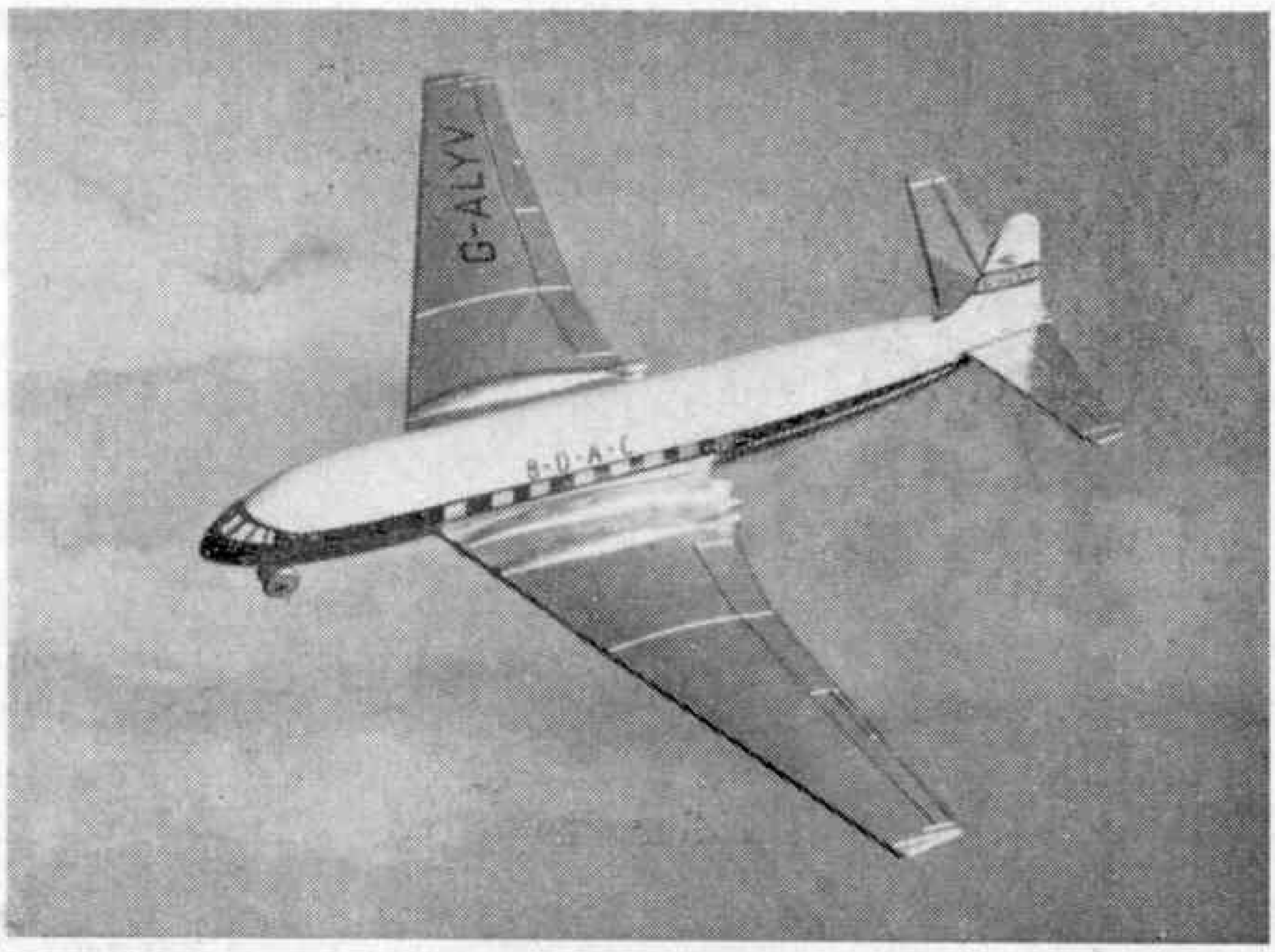
Above and at the head of the opposite page are pictures of a heavy duty plate bending and straightening machine, that can deal with steel plates up to 1¾ in. in thickness. It was designed and built by Joshua Bigwood and Son Limited, to whom we are indebted for our illustrations.

DINKY NEWS

Welcome Additions to the Range

By **THE TOYMAN**

YOU will remember that last month the Editor told something of the way in which Dinky Toys are made. His two articles took up so much space that I was unable to include my usual chat about the latest additions to the range. Acting, however, on the principle that it is better to do a good thing late than never, I am giving now some details of the Armoured Car, Dinky Toys No. 670, which was introduced in September. In view of the keen interest in the range of Army vehicles that collectors generally are taking I feel sure that these will be welcomed.



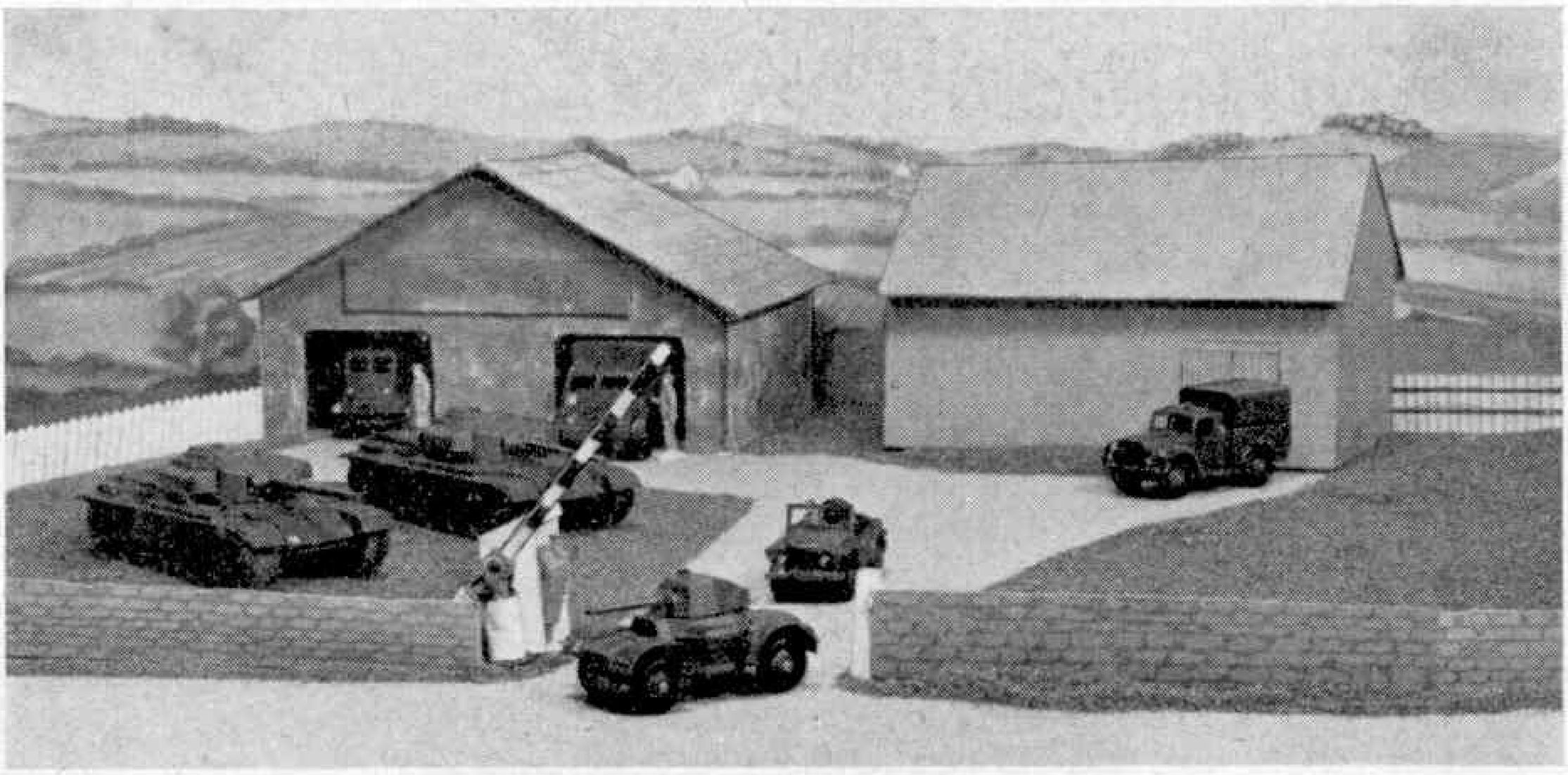
The strikingly beautiful lines and handsome appearance of the new Dinky Toys No. 702, Comet, are revealed in this realistic picture of the model in flight.

Following on the introduction of the Centurion Tank many collectors asked for an armoured car, so that they could make up an effective and realistic armoured column. The Armoured Car now available meets this need splendidly, for it is based on one of the latest vehicles of this kind and in fact has already received a most enthusiastic welcome. Several collectors have written to me expressing their delight in its sturdy appearance and in its faithful reproduction of details, so it is evident that this vehicle is going to be one of the most popular in the series.

A close-up picture of the Armoured Car appears in the lower illustration on the opposite page. This shows how splendidly it models the actual vehicle, and those of you who already have the Dinky Toy itself will not need to have this emphasised, as you will be able to see it for yourselves. The 2-pounder gun is mounted in a swivelling turret, which can be turned through a complete circle just like the one on the real vehicle, and of course the model is finished in the usual service green and equipped with Royal Armoured Corps signs to complete its realism.

The armoured car is one of the most effective mobile weapons used by modern armies, and the Dinky Toys model is just the thing for use on patrol duties with a miniature armoured column. The picture at the top of the opposite page shows it with other vehicles in the Army series, arranged in a typical scene representing a section of an armoured unit, with two Centurion Tanks lined up inside the camp in front of a small garage. The Armoured Car is just leaving, and is shown passing under a simple lifting barrier of the kind often used to control traffic in and out of Army camps. These barriers can be made quite easily from a few Meccano parts, or strips of wood, and they add an authentic touch to a scene.

Now I come to an item that I know will please all Dinky Toys aeroplane collectors, and especially those who have suggested models of some of the latest jet aircraft. Preparations are in hand for the introduction of Dinky Toys models of several of the most attractive, and the first of them, the de Havilland



A Dinky Toys military depot, with the new Armoured Car, Dinky Toys No. 670, just passing the barrier.

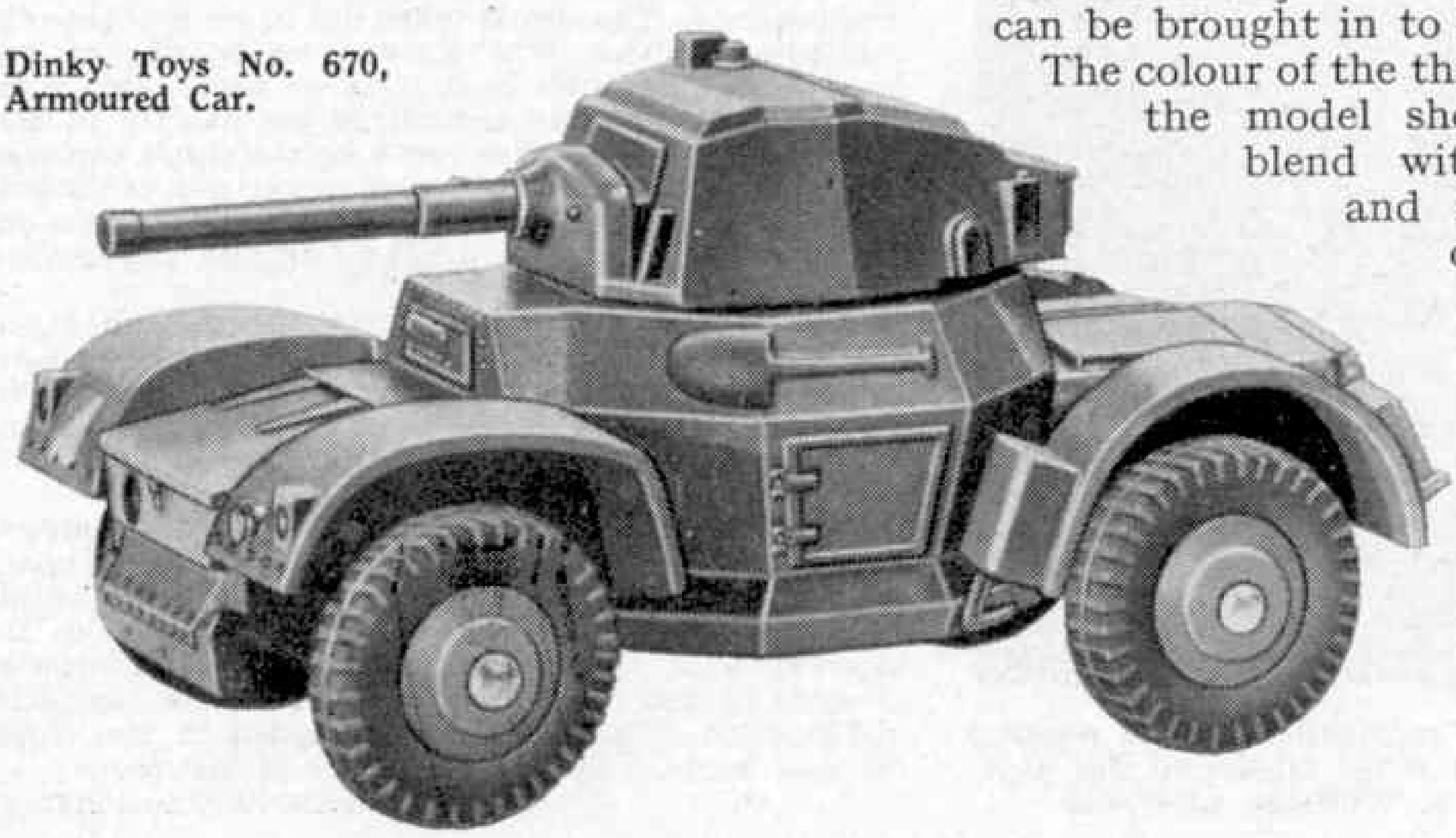
Comet, has already been produced as the new Dinky Toy for October.

The Comet really needs no introduction, as it is probably the best known of all the civil aeroplanes produced since the war. Its handsome lines are reproduced perfectly in the model, as can be seen in the picture reproduced on the facing page, and there is no doubt that it will be an attractive addition to the fleet of every aeroplane collector. The model is beautifully finished in white and silver, with a tapered blue flash extending the length of the fuselage. The cowls of the jet engines are moulded realistically into the wings, and among other details are registration letters, and markings to indicate the control surfaces.

In order to take my picture showing the Comet in flight I suspended the model with pieces of fine thread, against a background painted with a simple cloud effect. This is a useful arrangement for displaying any Dinky Toys aeroplane, for by adjusting the threads a model can be made to take up almost any flying position, and indeed to appear as it is seen when landing or taking off. I am sure you will be able to make good use of this scheme in building an airfield layout in miniature.

An interesting suggestion I tried some time ago, and which you may find useful, is to tie the top ends of the threads to small metal rings. The rings can then be arranged to slide on a wire stretched over a landing field, with one end slightly lower than the other. A spacing piece of wood or metal is fitted between the rings to keep them apart. As the rings slide down the wire the model is carried along in a most realistic way, and if the height of the wire is adjusted carefully the aeroplane can be brought in to land on the runway.

The colour of the threads used to support the model should be selected to blend with the background, and if a good match is obtained they will be almost invisible in use. Further additions to the aeroplane series will be made in due course, so that you will be able to compose in this way really attractive and realistic air scenes of all kinds.



Dinky Toys No. 670, Armoured Car.

From Our Readers

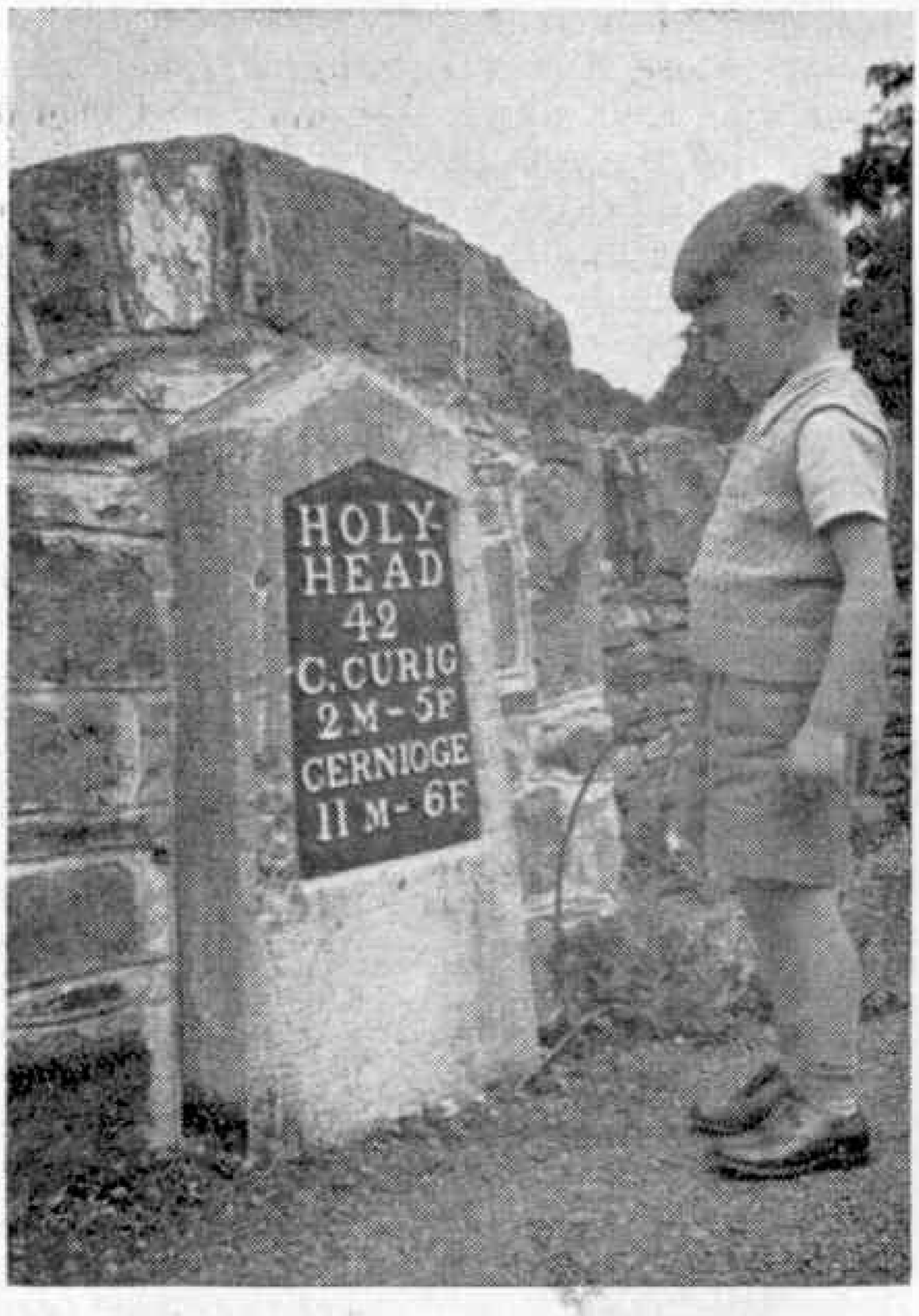
This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A UNIQUE MILESTONE

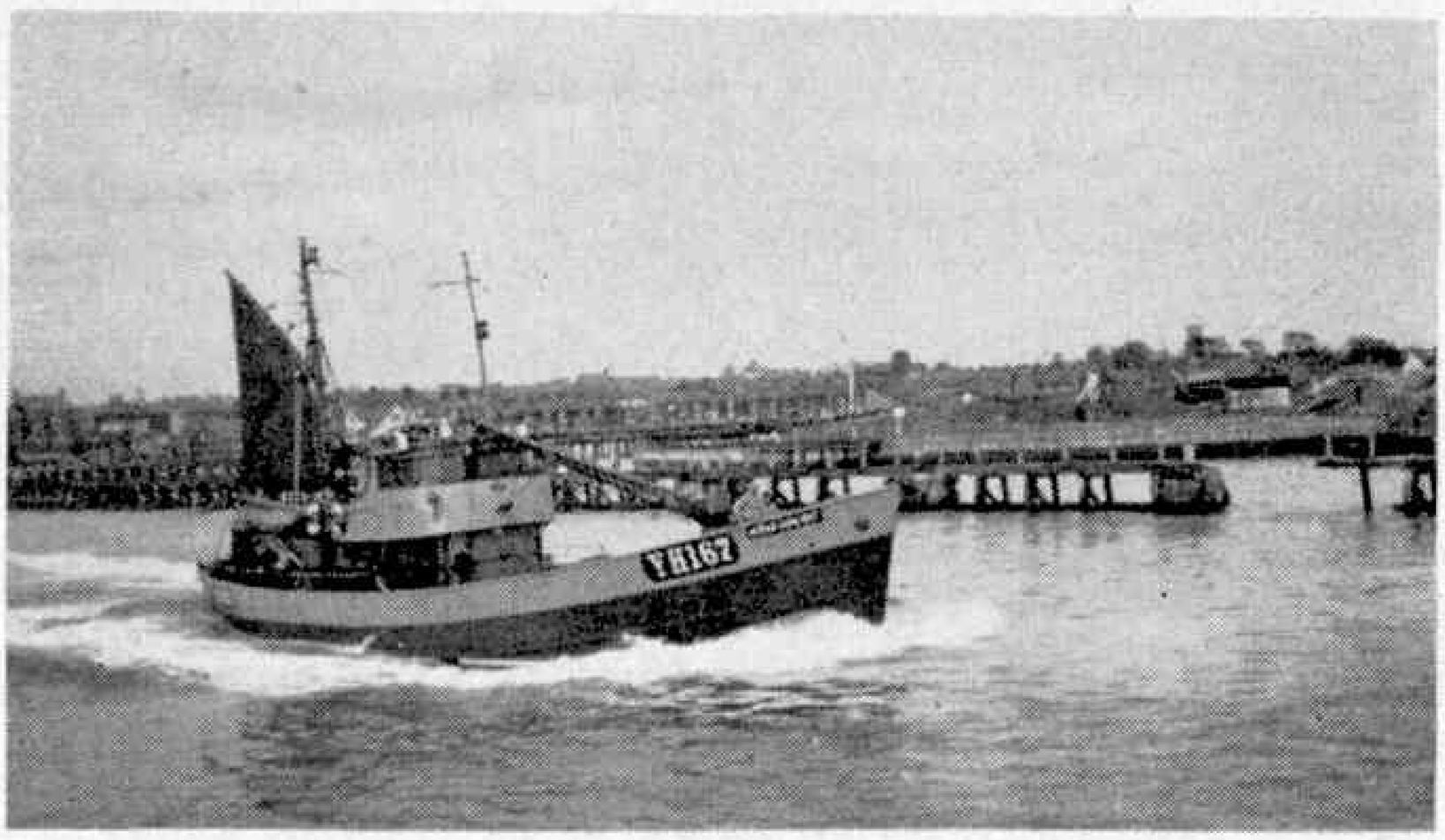
The accompanying illustration shows one of the old milestones on the London to Holyhead road. It was placed there during the coaching era, one of a series between Corwen and Bangor, and gives the distance in miles and furlongs to Holyhead, Capel Curig and Cernioge.

Holyhead and Capel Curig are familiar to all travellers in North Wales, but Cernioge is only a farm. At the height of the coaching period, it was the site of an inn and was a changing point for horses. But the coming of the railway rang the death knell of these romantic places, and the spacious premises, which once rang with the calls of the driver and hostler, now form part of a unique farm—unique because it may be the only one on a Class A road milestone.

H. S. Williams (Liverpool 17).



Where is Cernioge? The explanation of this unusual milestone is given in one of the articles on this page. Photograph by H. S. Williams, Liverpool.



The trawler "Ocean Sunlight." Photograph by G. E. Smith, Sutton, Surrey.

SWINGING THE COMPASS

I enjoyed a short trip on the *Ocean Sunlight*, a splendidly equipped modern trawler that I saw and inspected at Yarmouth. When I joined her Skipper Harris ordered the for'ard mooring rope to be cast off, so that the tide turned our bows out from the quayside. Then our stern ropes were cast off and the vessel moved slowly downstream, her engines throbbing gently. Soon we passed the Yarmouth Coastguard Station, where we saw the signal for a northerly gale at the masthead. We quickly ran into a heavy sea, so that waves were breaking over the ship as we plunged into the troughs and ploughed through the foam-crested waves.

When we had battled our way out several miles from the coast the compass adjuster climbed the ladder up to the roof of the wheelhouse, from where he shouted instructions to the Skipper at the wheel. We were going to "swing the ship". This has to be done at least twice in the herring season, and whenever new metal equipment is brought on board that may affect the compass. The ship is taken out to sea and then the compass adjuster, who knows the bearing of two easily distinguishable landmarks on shore, brings the ship so that the two landmarks are exactly in line. With the ship facing due north by the ship's compass, the adjuster sees if the bearing of the two landmarks in line according to the compass is the same as the one he knows to be correct; if not he adjusts the compass with soft iron bars.

This procedure was carried out with the ship facing in turn north, west, south and east. While the adjuster was working the ship's engines were stopped, so that sometimes we were rolling with the deck awash and sometimes pitching, when the sea came right over the wheelhouse.

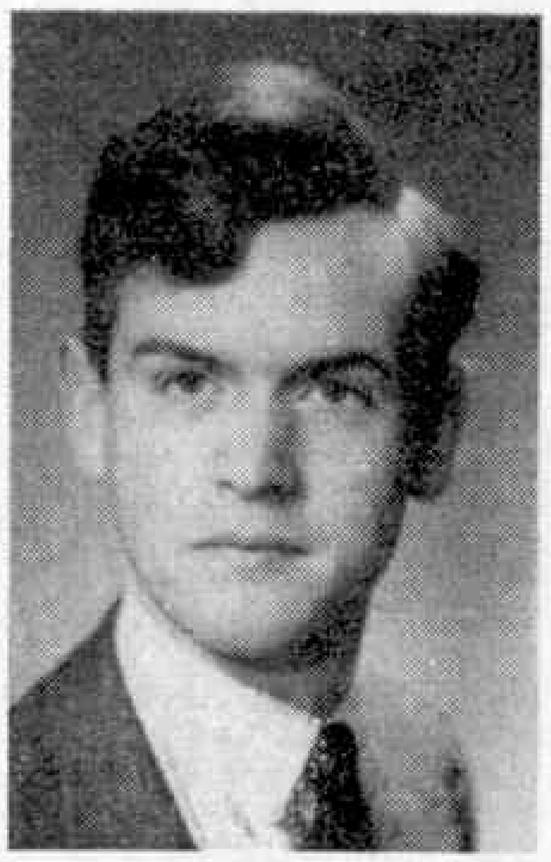
The wheelhouse is rightly called the nerve centre of this extremely well equipped modern trawler. There I was confronted by rows of dials that told the skipper at a glance our exact position, the distance to the nearest shore, the depth of the ocean and the size of a shoal of fish, and gave him much other technical information. The vessel was included in the Royal Review held at Spithead in June of last year.

G. E. Smith (Sutton, Surrey).

A skilful model-builder and competition prize-winner — H. Smith, Port Elizabeth, South Africa.

Among the Model-Builders

By "Spanner"



G. B. Wallis, Rugby, one of the many successful competitors in a world-wide Meccano Competition.

A CONSTANT DIRECTION DRIVE MECHANISM

From Piddletrenthide in Dorset comes an interesting mechanism designed to give a final drive in a constant direction, irrespective of the direction of the input drive. It was suggested by Mr. G. Welch, and as its uses may not be readily apparent it should be mentioned that Mr. Welch used it in the drive to the distance recorder of a speedometer that he built some time ago. The mechanism is shown in Fig. 1.

The device has an input shaft 1, on the inner end

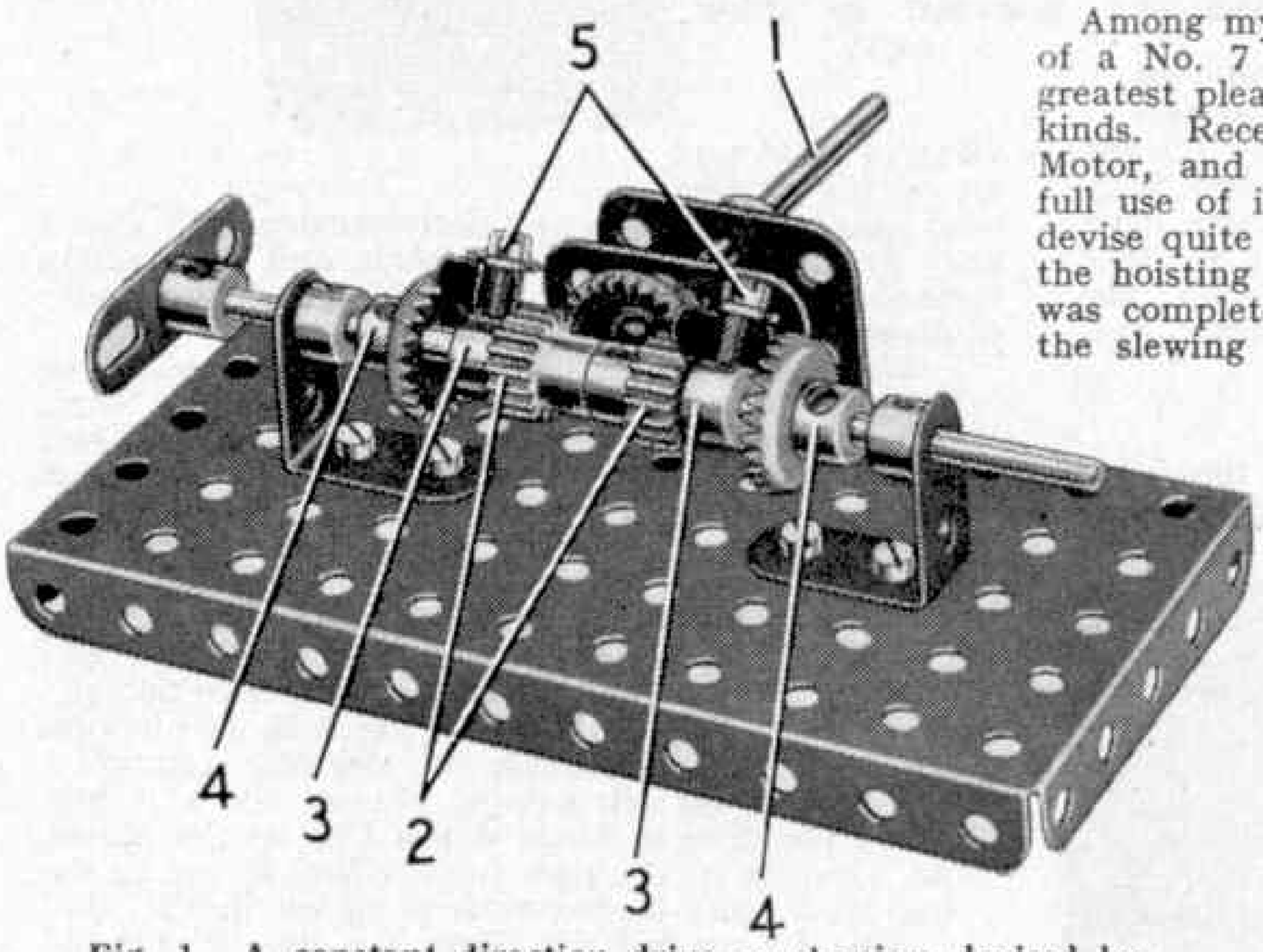


Fig. 1. A constant direction drive mechanism devised by Mr. G. Welch, Piddletrenthide, Dorset.

of which is a ¾" Contrate. The Contrate is arranged to be in constant mesh with two ½" Pinions 2, each of which is mounted on the output shaft but is not fixed in place. Collars 3 are used to prevent the two Pinions from sliding on the shaft. It will be seen that when the input shaft is turned its Contrate drives the two ½" Pinions 2 in opposite directions. On the output shaft two ¾" Contrates 4 are fixed as shown.

Screwed tightly into each of the Collars 3 is a ⅜" Bolt 5, on the shank of which a Spring Clip is slipped. Each Clip is arranged so that one of its lugs engages the teeth of one of the Pinions 2, while the other engages the teeth of the corresponding Contrate 4. The Spring Clips act as the pawls in a simple ratchet arrangement, and it is on their freewheeling action that the working of the mechanism depends.

When the drive is engaged the Pinions 2 turn in opposite directions in relation to each other, but one of them is connected to the output shaft through its ratchet mechanism, while the other ratchet arrangement freewheels and its Pinion turns idly on the shaft. If the direction of the drive is reversed, however, the ratchet formerly engaged becomes the freewheeler, while the second ratchet takes over the role of driver. From this it will be seen that the output shaft continues to turn in the same direction, irrespective of reversals in the rotation of the driving shaft.

A THREE-MOVEMENT GEAR-BOX

Among my many correspondents is a proud owner of a No. 7 Outfit, who tells me that he finds his greatest pleasure in building model cranes of various kinds. Recently he obtained a No. 1 Clockwork Motor, and quite naturally he is anxious to make full use of it in his models. While he was able to devise quite easily all kinds of schemes for operating the hoisting and luffing movements of his cranes, he was completely stumped when it came to operating the slewing motion, as he found that his stock of gears was insufficient to provide three separate movements, each of which could be independently controlled. Thinking I might be able to help him he wrote to me, and after looking into his problem I was able to suggest the gear-box shown in Figs. 2 and 3. I am glad to say that I have since heard from my correspondent that he finds the mechanism very useful and that he has been able to adapt it for use in several models.

Other model-builders may find the following details useful. The housing for the mechanism is made by bolting two 3½" × ½" Double Angle Strips across a No. 1 Clockwork Motor, with a Washer on each bolt between the Motor and the Double Angle Strip.

The lugs of the Double Angle Strips support two 3½" × 2½" Flanged Plates, and these are connected by two 3½" Strips 1. A 3" Pulley 2 is then attached underneath the Motor by a ½" Reversed Angle Bracket and a Double Bracket, and a 1½" Rod fixed in the boss of this Pulley is passed through a 3" Pulley 3 and is held in place by a Collar. In a model the Pulley 3 is attached to the base of the crane by two Double Brackets.

On the Motor driving shaft is a Worm 4, and two ½" Pinions 5 on the hoisting and luffing shafts respectively are arranged so that by sliding the shafts they can be moved into mesh with the Worm. Each of these shafts is a 5" Rod, and its movement is controlled by a lever that engages between two Collars fixed at one end of it. The lever is a 3½" Rod gripped in a Rod and Strip Connector locknutted to an Angle Bracket bolted to one of the Flanged Plates.

The drive to the slewing motion of the crane is brought into operation by sliding a 6½" Rod 6 so

as to bring a 57-tooth Gear on it into mesh with the Worm 4. Movement of this Rod is controlled by a lever 7, which is a 3½" Strip lock-nutted to an Angle Bracket bolted to one of the Flanged Plates. In this Strip is a ¾" Bolt held by two nuts, and this projects between two 1" Pulleys fixed on the Rod 6. The extent of the movements of the three sliding shafts is limited by Spring Clips placed at suitable positions on the Rods.

To complete the mechanism a Driving Band is placed round a 1" Pulley on Rod 6, then passed over a 3½" Rod 8 and round the 3" Pulley 3. Rod 8 is held by Spring Clips in Fishplates bolted to the lugs of a 2½" × 1" Double Angle Strip fixed underneath the Motor.

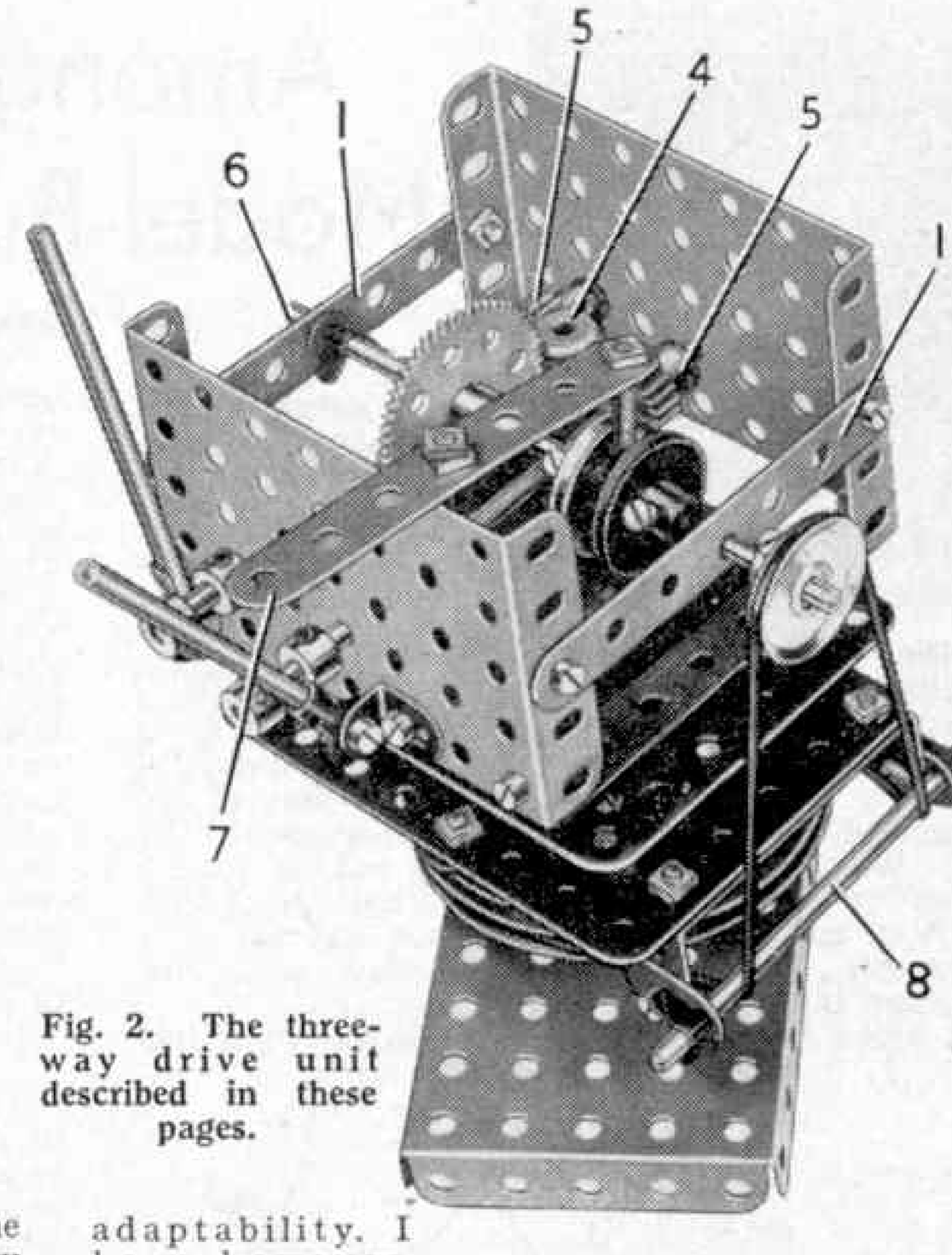


Fig. 2. The three-way drive unit described in these pages.

THE NEW MECCANO PARTS

This year, for the first time since the war, we have been able to add quite a number of new parts to the Meccano System. These have a great variety of uses and together they make a big contribution to the construction of better and more realistic models.

You cannot consider yourself up-to-date in Meccano matters until you have obtained these new parts, and have familiarised yourself with their uses, so if you have not already done so I advise you to go along to your dealer and see them as soon as you can.

In addition to the new parts and Outfits, a completely new range of Instructions Books has been published. These contain many new and attractive models in which good use is made of the new parts.

Some of the new parts have been on sale for some weeks and have already been used in new models described in the *M.M.*, but some of the others have only become available to Dealers very recently. No doubt many model-builders have already added the new parts to their stocks and have discovered for themselves their usefulness and adaptability. I have, however, been asked by some of my correspondents to give a brief description of the new parts and to mention some of their main uses, so I am taking the opportunity of doing so now.

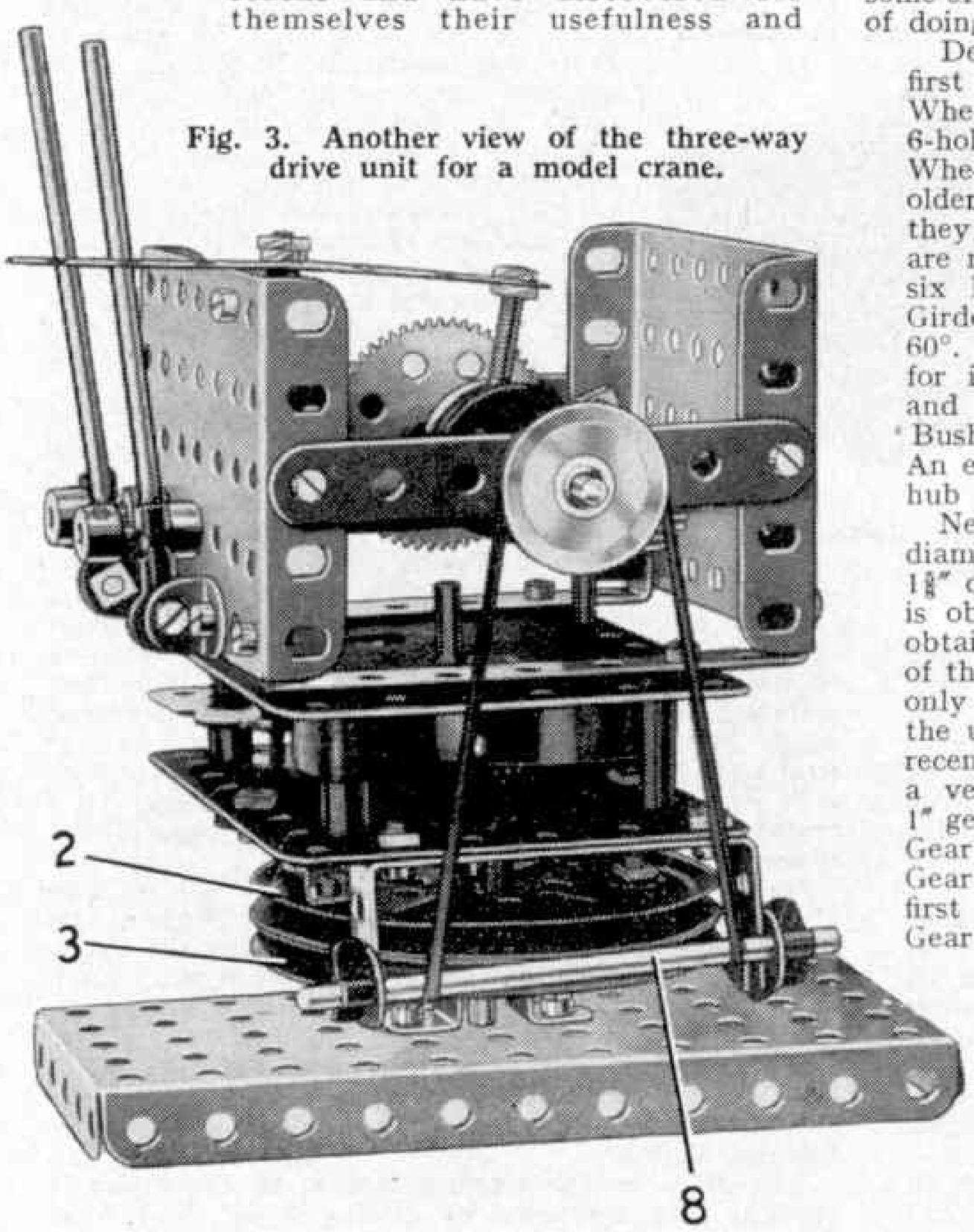


Fig. 3. Another view of the three-way drive unit for a model crane.

Dealing with the parts in catalogue order, the first to be mentioned are Part No. 24b, Bush Wheel, 6-holes, and Part No. 24c, Wheel Disc, 6-holes. These are similar to the 8-hole Bush Wheels and Wheel Discs, which are two of the older and most useful of all Meccano parts, but they can be used in cases where the older parts are not really satisfactory. The provision of only six holes in the new parts enables Strips and Girders to be bolted to them at angles of 30° and 60°. The value of this arrangement is obvious, for it is now quite easy to assemble triangular and hexagonal structures braced to a 6-hole Bush Wheel or a 6-hole Wheel Disc at the centre. An example of the new Bush Wheel in use as the hub of a three-bladed vane is shown in Fig. 6.

Next in the list are Part No. 26c, Pinion $\frac{7}{16}$" diam., 15 teeth, and Part No. 27d, Gear Wheel, 1⅜" diam., 60 teeth. The value of these new gears is obvious, for with them a ratio of 4:1 can be obtained in a single stage. Before the introduction of these new gears a ratio of 4:1 could be obtained only by using two stages of gearing, involving the use of four separate gears. As a result of the recent introductions it is now possible to make a very compact four-speed gear-box, using two 1" gears for fourth gear, a ¾" Pinion and a 50-tooth Gear for third gear, a ½" Pinion and a 57-tooth Gear for second gear and the two new gears for first or bottom gear. The new Pinion and the Gear will mesh with other Pinions and Gears in the range, provided that bearings at correct centres are arranged.

Part No. 173a, Adaptor for Screwed Rod, is shown in use in Fig. 4. This part is somewhat similar to the existing Rod Socket, but the hole in its boss is threaded to take a standard Screwed Rod, and it has a plain shank of the same diameter as a standard Axle Rod. The primary purpose of the Screwed Rod Adaptor is to provide

a means of mounting Screwed Rods in bearings without danger of damaging their threads. In use a Screwed Rod Adaptor can be fitted to each end of a Screwed Rod and fixed in place by a nut. The plain shanks of the Adaptors then provide the equivalent of a section of standard Rod at each end of the Screwed Rod, and allow it to be journalled in the holes in Strips or Angle Girders just like an ordinary Rod.

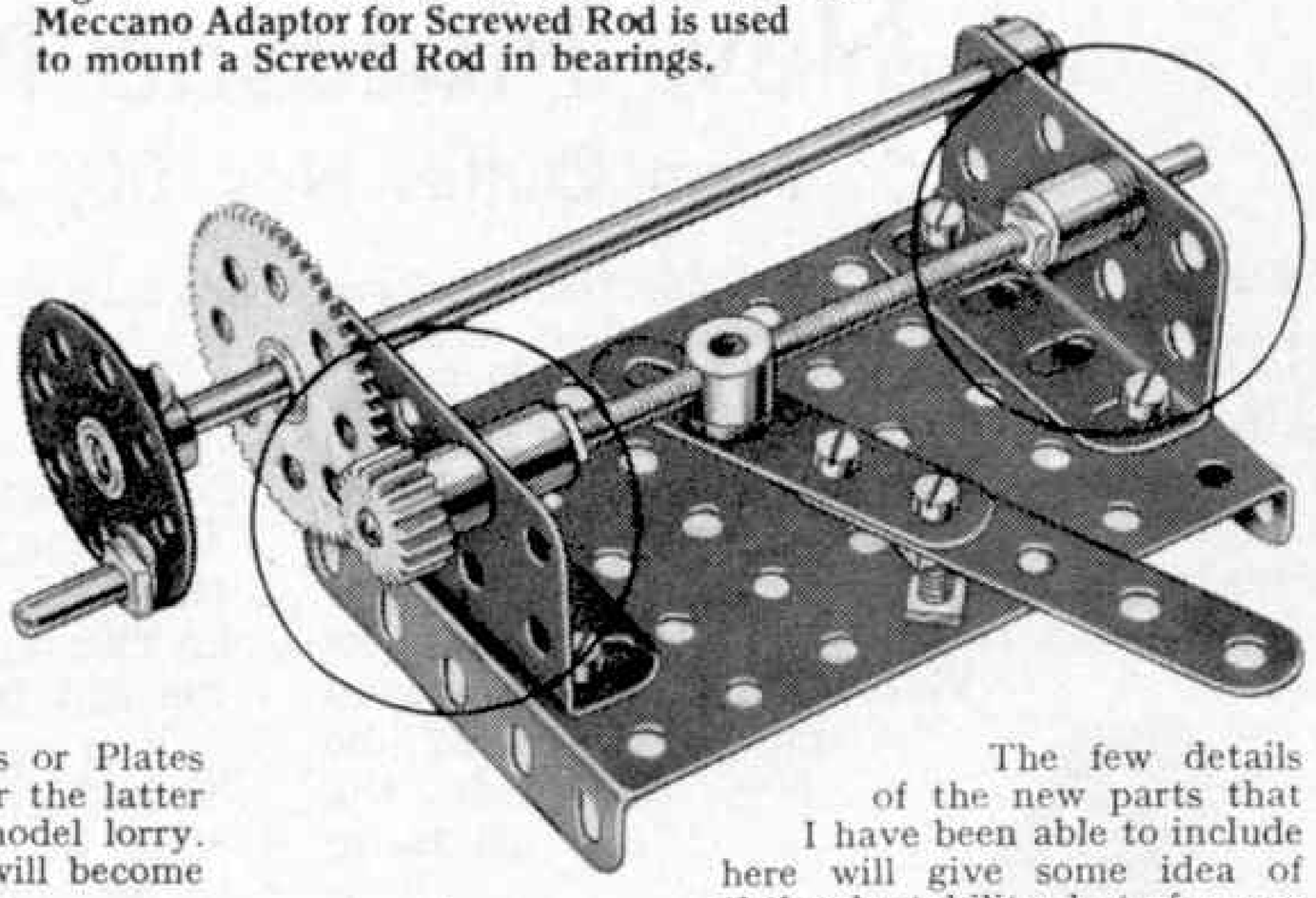
The Right-Angle Rod and Strip Connector, Part No. 212a, resembles one half of a Meccano Hinge without the hinge pin. It is provided with a hole that allow it to be bolted to other parts, and it has a rolled over tube-like end, of such a diameter that a Rod pushed into it is held tightly in place. The Right-Angle Rod and Strip Connector can be used for supporting handrails or for pivotally attaching Strips or Plates to a Rod. A typical example of its use for the latter purpose is in the hinged tailboard of a model lorry. The part has other uses of course which will become apparent in the course of model-building.

Last but by no means least in the list of new parts now available is the splendid range of Triangular Flexible Plates, Parts Nos. 221 to 226. These are available in six sizes as follows: $2\frac{1}{2}'' \times 1\frac{1}{2}''$, $2\frac{1}{2}'' \times 2''$, $2\frac{1}{2}'' \times 2\frac{1}{2}''$, $3\frac{1}{2}'' \times 1\frac{1}{2}''$, $3\frac{1}{2}'' \times 2''$ and $3\frac{1}{2}'' \times 2\frac{1}{2}''$. Together these parts give a considerable boost to the Meccano system, for they are extremely useful in modelling rounded and curved structures such as are so often required in reproducing the graceful curved outlines of modern machines and vehicles. They will deal adequately with the awkward spots in vehicle bodies where the ordinary rectangular Flexible Plates cannot be used successfully, and are ideal for filling wheel arches or edging off the mudguards ot a car.

They are made of material similar to that from which the Flexible Plates are made, so that they can readily be pressed into curved form and just as readily flattened out again after use.

Another application for the Triangular Flexible Plates that may not be so obvious, however, is in making the flat plates of non-standard sizes. For instance in Fig. 5, two $3\frac{1}{2}'' \times 2''$ Triangular Flexible Plates are used to form a $3\frac{1}{2}'' \times 2''$ flat plate by bolting them together with their diagonal edges overlapped. Formerly it was necessary to use four $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates to give the same result.

Fig. 4. This illustration shows how the new Meccano Adaptor for Screwed Rod is used to mount a Screwed Rod in bearings.



The few details of the new parts that I have been able to include here will give some idea of their adaptability, but of course the applications I have mentioned by no means exhaust the possibilities of these parts in general model-building. Later on I hope to organise a competition in which prizes will be offered to readers who find the most novel and useful applications for these new parts. So it would be a good idea for you to obtain some of them right now and start experimenting on your own account!

Fig. 5. (Below) Two Triangular Flexible Plates used to form a rectangular flat plate of non-standard dimensions.

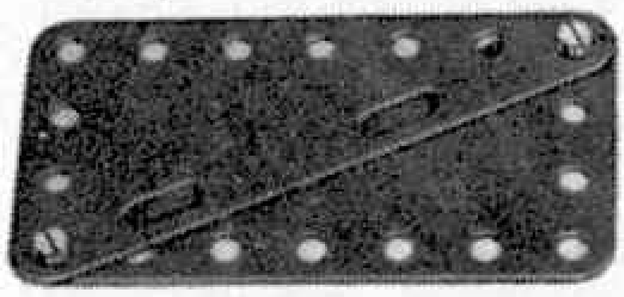
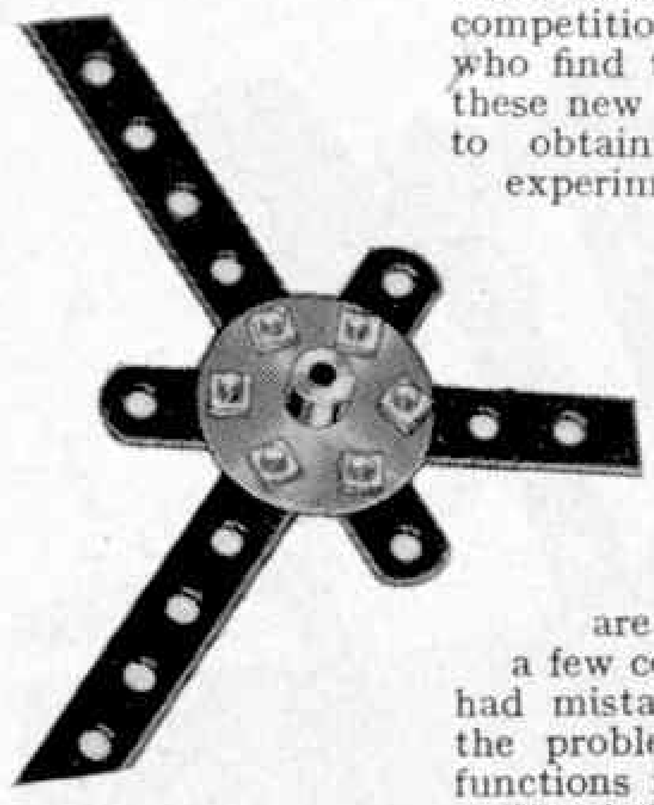


Fig. 6. (Right) The new Bush Wheel, with six holes, (Part No. 24b), used to form the hub of a three-bladed helicopter rotor.



MECCANO BRAIN TEASER (July *M.M.*)

The Prize-Winning Solution

The Meccano "Brain Teaser," of which I gave details in the *Among the Model-Builders* pages of the July *M.M.*, evidently appealed to model-builders, judging from the many letters I received containing suggestions for solving the problem. Some of the methods suggested are most ingenious, but I am sorry to say that a few competitors sent in entries showing that they had mistaken the type of mechanism called for in the problem, for their solutions did not fulfil the functions required.

The judges decided that an entry received from L. Holman, Redruth, Cornwall, was the most skilfully devised and original, and they awarded the prize of One Guinea to this competitor. Holman's mechanism is shown in Fig. 7 on this page. His solution is based on the opposed crank principle, making use of a double crank to overcome the dead-centre difficulty.

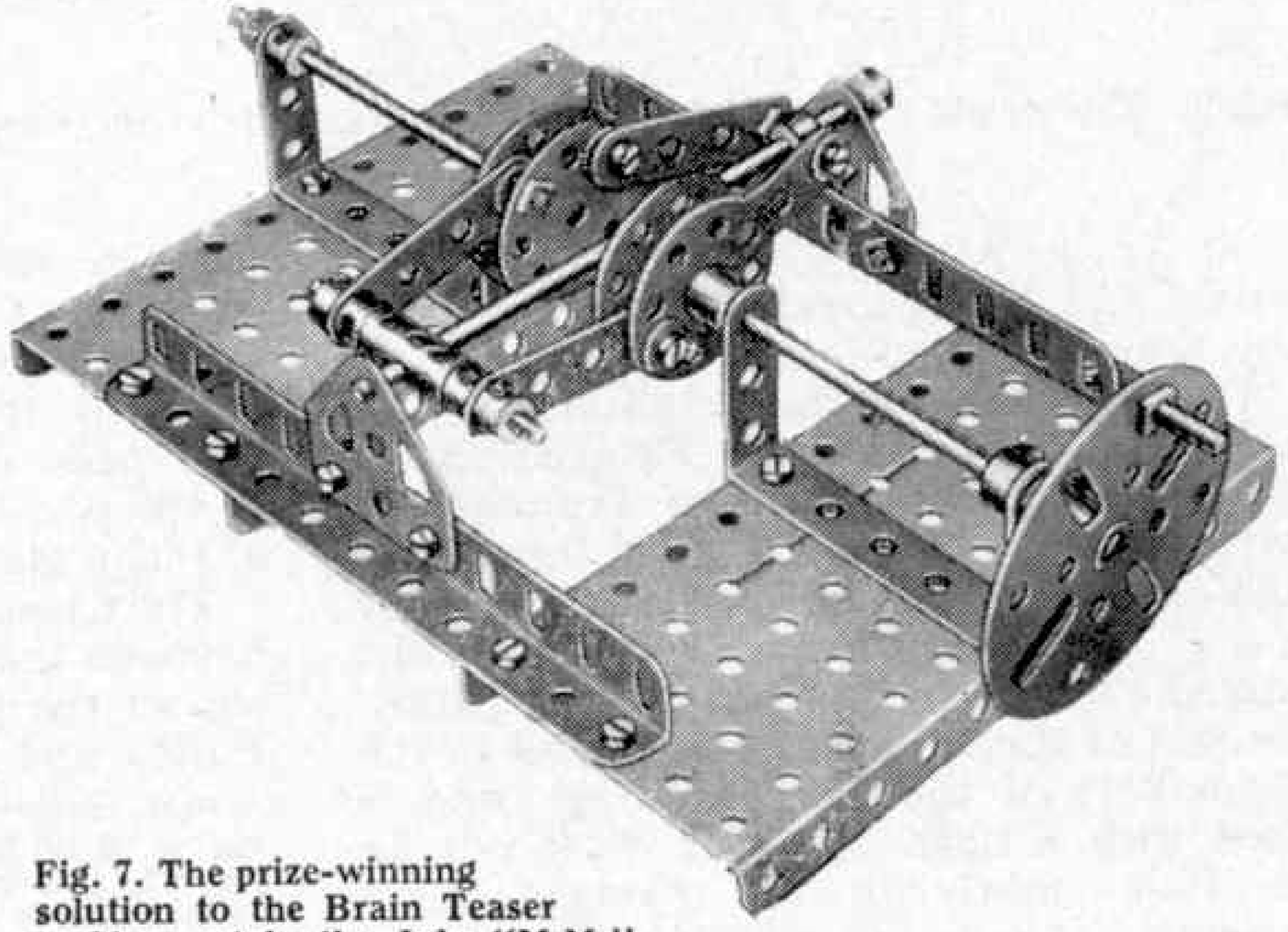


Fig. 7. The prize-winning solution to the Brain Teaser problem set in the July "M.M."

New Meccano Models

From Outfits Nos. 00, 2 and 4

THIS month we are describing three models specially for the owners of small Outfits. The Luffing Crane seen in Fig. 1 is built with the most recent addition to the range of Meccano Outfits, the new Outfit No. 00. The simple but realistic Breakdown Lorry (Fig. 2) is designed for construction from Outfit No. 2, while the Planing Machine illustrated in Fig. 3 can be built from the parts in Outfit No. 4. All three models are working models and will provide great fun when they are completed.

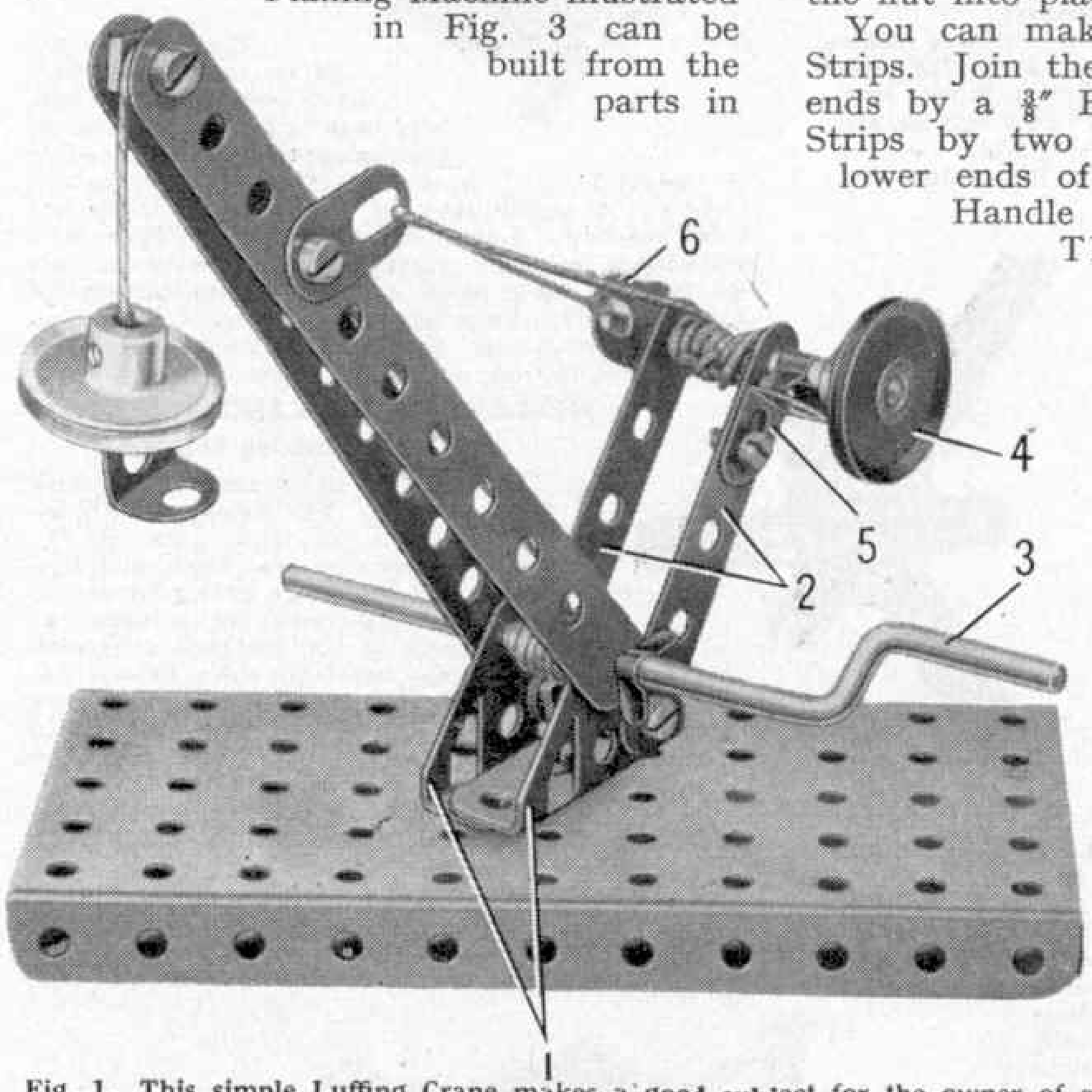


Fig. 1. This simple Luffing Crane makes a good subject for the owner of a No. 00 Outfit.

We are describing the Crane first. The base of this is a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate, and on it are mounted two Trunnions 1 that form the swivelling part of the model. They are fixed tightly together by a nut on a $\frac{3}{8}''$ Bolt, which is pushed through the centre holes in the flanges of the Trunnions. The end of the Bolt is then inserted in the centre hole of the Flanged Plate, and is fitted with a nut. This nut must not fix the Bolt tightly in the Flanged Plate however, and a second nut is screwed tightly against the first in order to prevent it from unscrewing. If this is done correctly the Bolt and the Trunnions will be able to swivel freely on the base plate. Now bolt a $2\frac{1}{2}''$ Strip 2 tightly to each Trunnion, using a bolt passed through the large triangular hole. Place a Washer on the bolt before the nut and then screw the nut into place.

You can make the jib from two $5\frac{1}{2}''$ Strips. Join these together at their top ends by a $\frac{3}{8}''$ Bolt fixed in one of the Strips by two nuts. Now mount the lower ends of the Strips on a Crank Handle 3 outside the Trunnions. This Crank Handle is supported in the holes at the pointed ends of the Trunnions and is held in place by Spring Clips.

The next step in the construction of the Crane is to arrange the winding handle that controls the luffing or raising and lowering movement of the jib. Fix a 1" Pulley 4 on a 2" Rod, passed through the top holes of the Strips 2. Hold the Rod in position with two Spring Clips. Bolt an Angle Bracket 5 to one of the Strips, so that it presses against the lugs of the Spring Clip of one side. The Spring Clip will then be prevented from turning with the 2" Rod, and it will act as a brake to prevent the Rod from turning too freely. Tie a piece of Cord to the Rod between the Strips 2 and pass it through a Fishplate bolted to the jib. Then tie the end of the Cord to a Fishplate 6 held on the 2" Rod.

Tie a piece of Cord to the Crank Handle between the Trunnions and take it over the top of the jib, before attaching to it a 1" Pulley and an Angle Bracket.

Parts required to build the Luffing Crane: 2 of No. 2; 2 of No. 5; 2 of No. 10; 2 of No. 12; 1 of No. 17; 1 of No. 19s; 2 of No. 22; 2 of No. 35; 10 of No. 37a; 4 of No. 37b; 2 of No. 38; 1 of No. 52; 2 of No. 111c; 2 of No. 126.

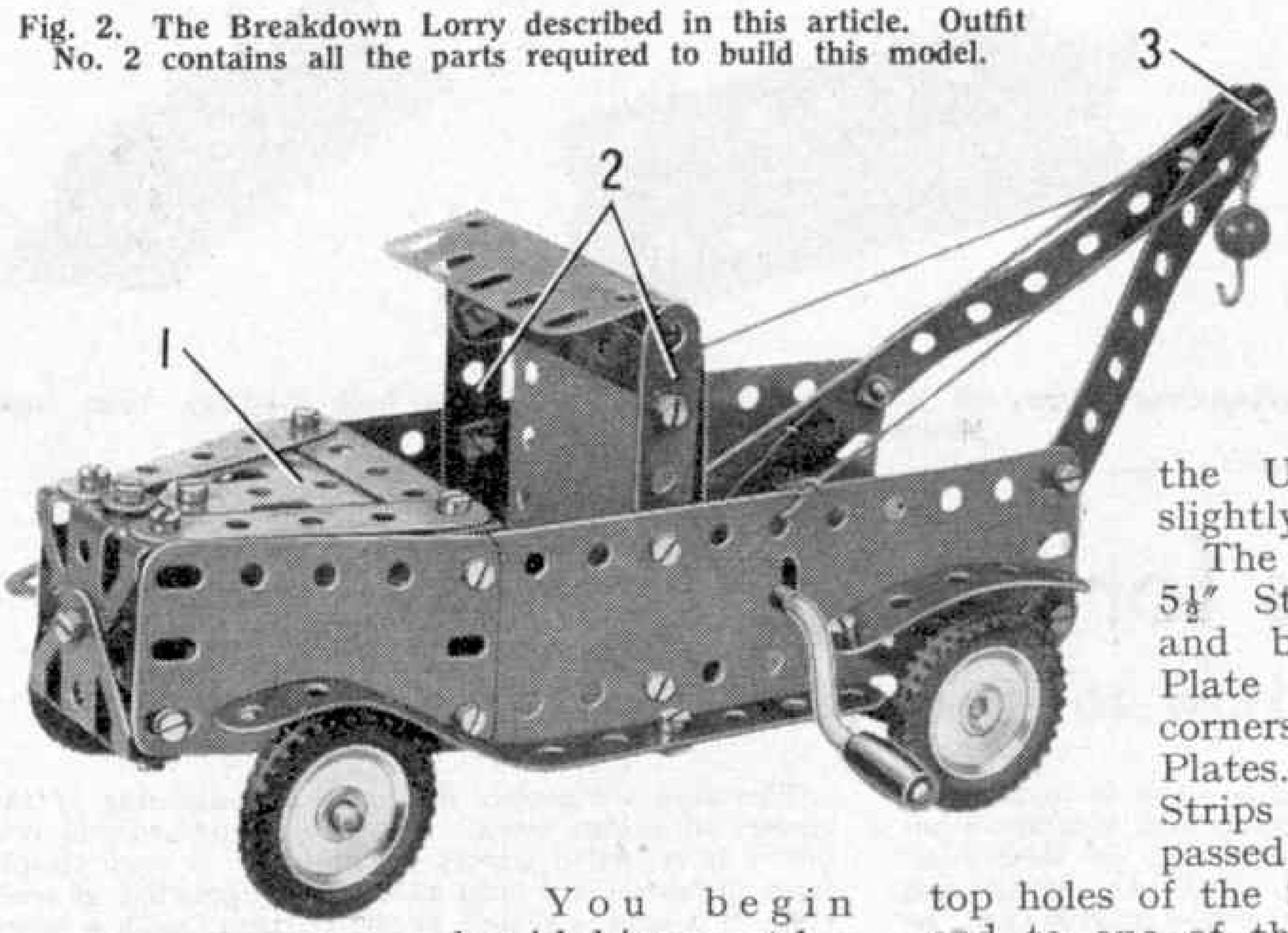


Fig. 2. The Breakdown Lorry described in this article. Outfit No. 2 contains all the parts required to build this model.

You begin building the Breakdown Lorry shown in Fig. 2 by bolting a 5½″×1½″ Flexible Plate along each of the longer sides of a 5½″×2½″ Flanged Plate that forms the chassis and platform. For the sides of the bonnet use 2½″×1½″ Flexible Plates and connect them by Angle Brackets to the radiator, which consists of two Trunnions bolted together. Fill in the top of the bonnet with three 2½″ Strips arranged as shown and bolt them to the flange of the upper Trunnion. Attach the rear ends of the Strips to the sides of the bonnet by Angle Brackets. Now attach the Flat Trunnion 1 to the top of the radiator with a Fishplate.

The front wheels should be fixed on a 3½″ Rod mounted in Fishplates bolted to the 2½″×1½″ Flexible Plates. The rear wheels also should be fixed on a 3½″ Rod supported in 2½″ Stepped Curved Strips attached to the flanges of the 5½″×2½″ Flanged Plate. For the mudguards 5½″ Strips and 2½″ Strips shaped as shown are connected to the body of the model by Angle Brackets.

To make the cab bolt a 2½″ Strip 2 vertically to each side. Then connect these Strips by a 2½″ × ½″ Double Angle Strip, which is used to support the 2½″ × 2½″ Flexible Plate and the U-section Curved Plate that form the back of the cab and the roof. You should open out the U-section Curved Plate slightly before fixing it in place.

The crane is made from two 5½″ Strips shaped as shown and bolted to the Flanged Plate and to the top rear corners of the 5½″×1½″ Flexible Plates. Now brace the 5½″ Strips by a length of Cord passed through the next to top holes of the Strips and tied at each end to one of the Flexible Plates. The top ends of the 5½″ Strips should be connected by a ⅜″ Bolt 3. Pass a Crank Handle through the centre holes of the 5½″×1½″ Flexible Plates and to it tie a length of Cord. Pass the Cord over the Bolt 3 and attach its free end to a small Loaded Hook.

A towing attachment at the back of the lorry is provided by a ½″ Reversed Angle Bracket bolted to the 5½″×2½″ Flanged Plate.

Parts required to build the Breakdown Lorry: 4 of No. 2; 6 of No. 5; 3 of No. 10; 6 of No. 12; 2 of No. 16; 1 of No. 19g; 4 of No. 22; 2 of No. 35; 40 of No. 37a; 37 of No. 37b; 4 of No. 38; 1 of No. 40; 2 of No. 48a; 1 of No. 52; 1 of No. 57c; 2 of No. 90a; 2 of No. 111c; 1 of No. 125; 2 of No. 126; 1 of No. 126a; 4 of No. 142c; 2 of No. 188; 2 of No. 189; 1 of No. 190; 1 of No. 199.

Our third new model is the woodworkers' Planing Machine shown in Fig. 3. Each side of the machine bed is made by

(*Continued on page 558*)

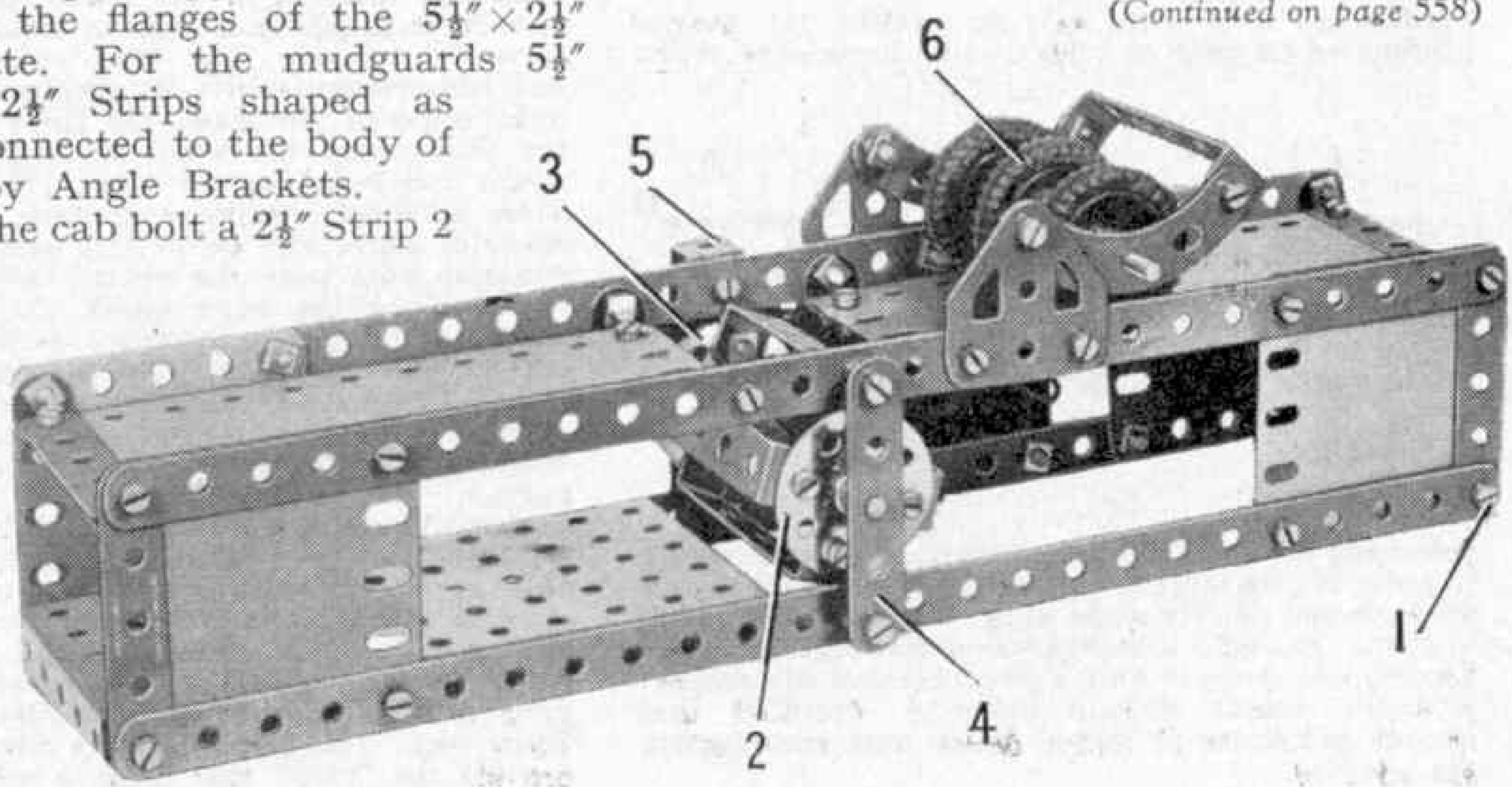
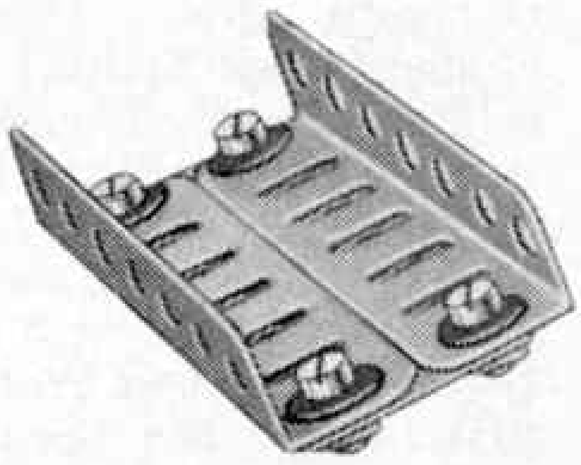
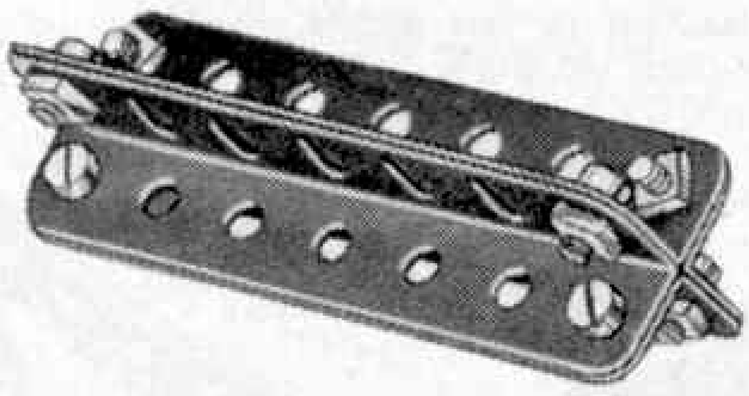
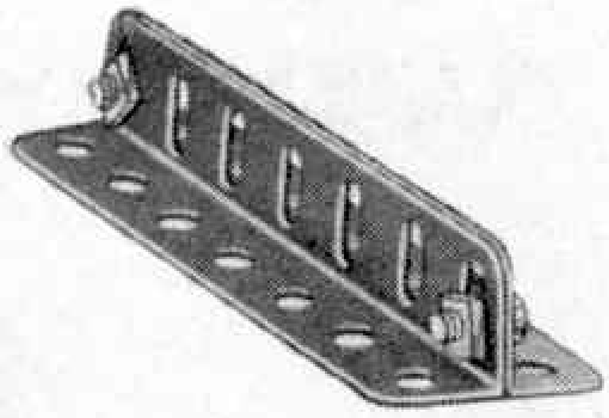


Fig. 3. This model of a woodworkers' Planing Machine is driven by a Magic Clockwork Motor, and can be built with a No. 4 Outfit.







Figs. 1, 2 and 3. A channel-section girder, an X-section girder and a shallow web T-girder, built from Meccano parts.

Girders for Bridge Construction

How to Make and Use Them

IF model-builders were asked to place in order their favourite subjects for modelling with Meccano I am sure that bridges would appear high in their lists. Simple girder bridges, arch, cantilever, lifting and suspension bridges, all form subjects that can be modelled easily and realistically from even a small Outfit, and I suppose every model-builder has at some stage in his career set to work to build a model of one of the famous bridges, such as the Quebec Cantilever Bridge or the arch bridge across Sydney Harbour, which form vital links in modern rail and road systems. Many excellent examples of Meccano bridges have been illustrated in the *M.M.* and further proof of the popularity of these subjects is found in the large number of bridge models entered in the model-building competitions announced in the *M.M.*

It is easy to see why bridges make such splendid subjects for Meccano models, for the basic structural parts used in their make-up are similar in all essentials to the Meccano Girders, Strips, Flat Trunnions, etc., with which every Meccano boy is familiar.

Although it is fairly easy to produce the general outlines of an original bridge, some knowledge of the principles involved in bridge construction is necessary in order to give large models of this kind the necessary strength and rigidity while using the minimum number of parts. Actually it is possible to bolt together a few Girders and Strips to form a structure that will support a man's weight without difficulty, provided that correct principles of girder design and construction are adopted.

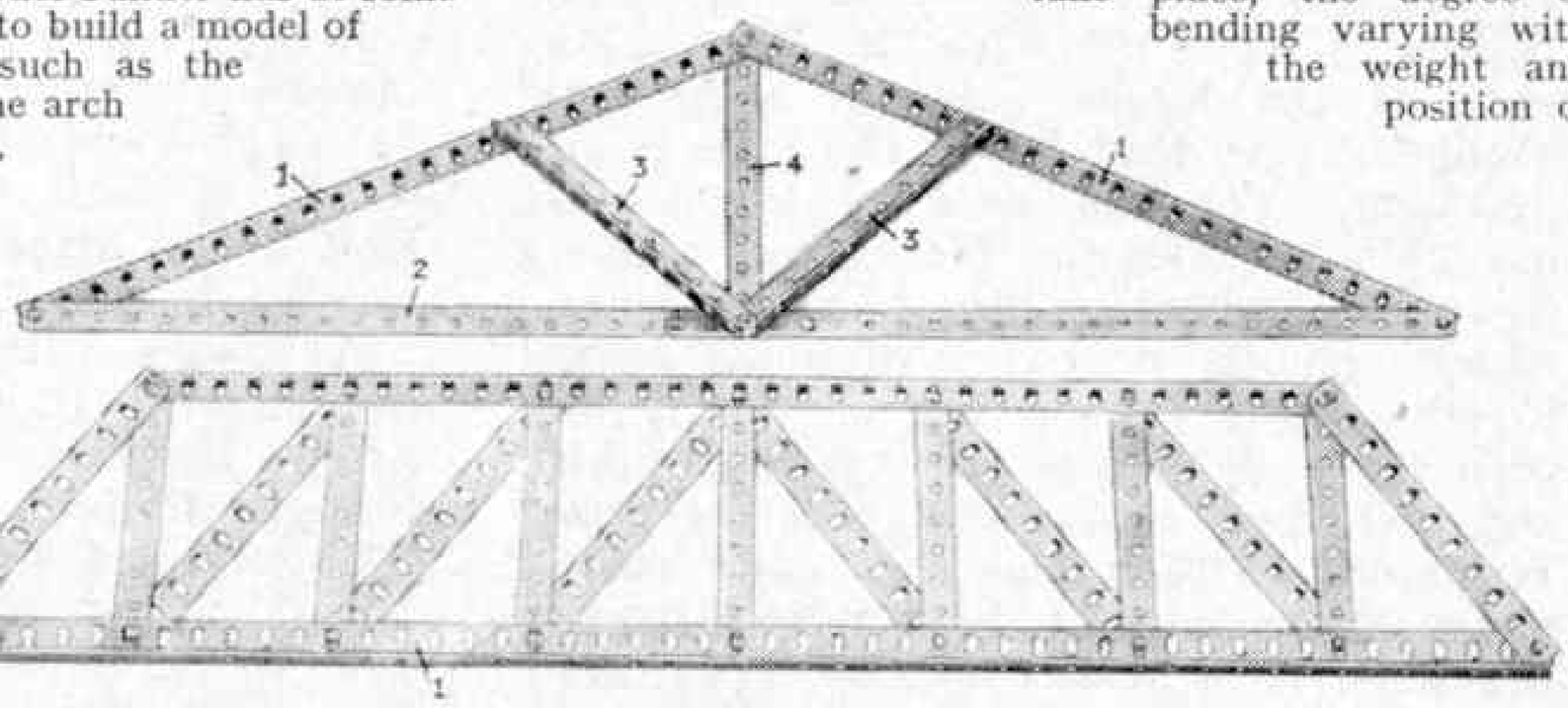
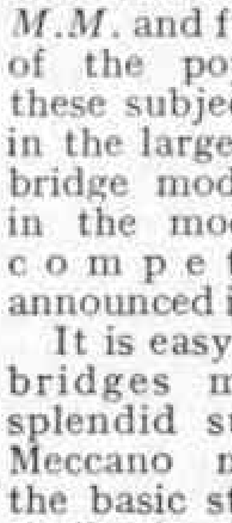
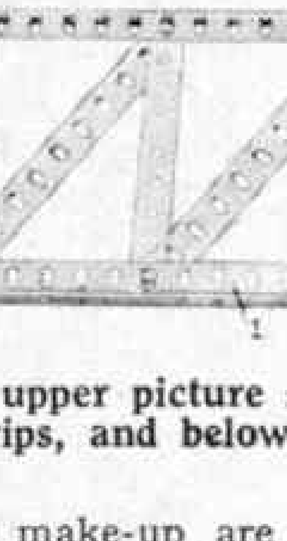


Fig. 4. The upper picture shows a simple but strong roof truss built from girders and strips, and below it is a built-up side member for a girder bridge.



Figs. 5 and 6. Diagrams illustrating (right) the correct and (left) the incorrect methods of bolting Angle Girders together.



The need for proper design and positioning of the girders in bridge work will be easily understood if a girder is regarded simply as a beam. A very simple form of beam is a strip of timber supported at each end. If a load is placed at the centre of such a beam a certain amount of bending will take place, the degree of bending varying with the weight and position of the load. This bending causes the particles forming the material of the upper face of the beam to be squeezed together or put in a state of compression, while the material of the lower surface is made to stretch, or is put in a state of tension, as it is more correctly termed. The load causing this tension and compression exerts its greatest effect along the outer edges of the beam, and there is a line dividing the part where the wood is compressed from that where it is being stretched out. The strength of the beam in these conditions depends on the depth of material above and below this line. If some of the material from near the centre line is removed and placed along the outer edges, the strength of the beam will be greatly increased without increasing its weight, and this is just what engineers do when they make girders for constructional work.

Girders can take several different forms, all of which can be assembled very easily from Meccano parts.

Meccano Angle Girders are similar to two Strips connected together at right-angles, and it is this right-angle formation that gives the Girders their strength and ability to withstand considerable bending stresses. Every Meccano boy will know that each Angle Girder is perforated with round holes in one flange and elongated holes in the other, but he may not know why. The purpose of the elongated holes is to provide the "play" that is often necessary when the

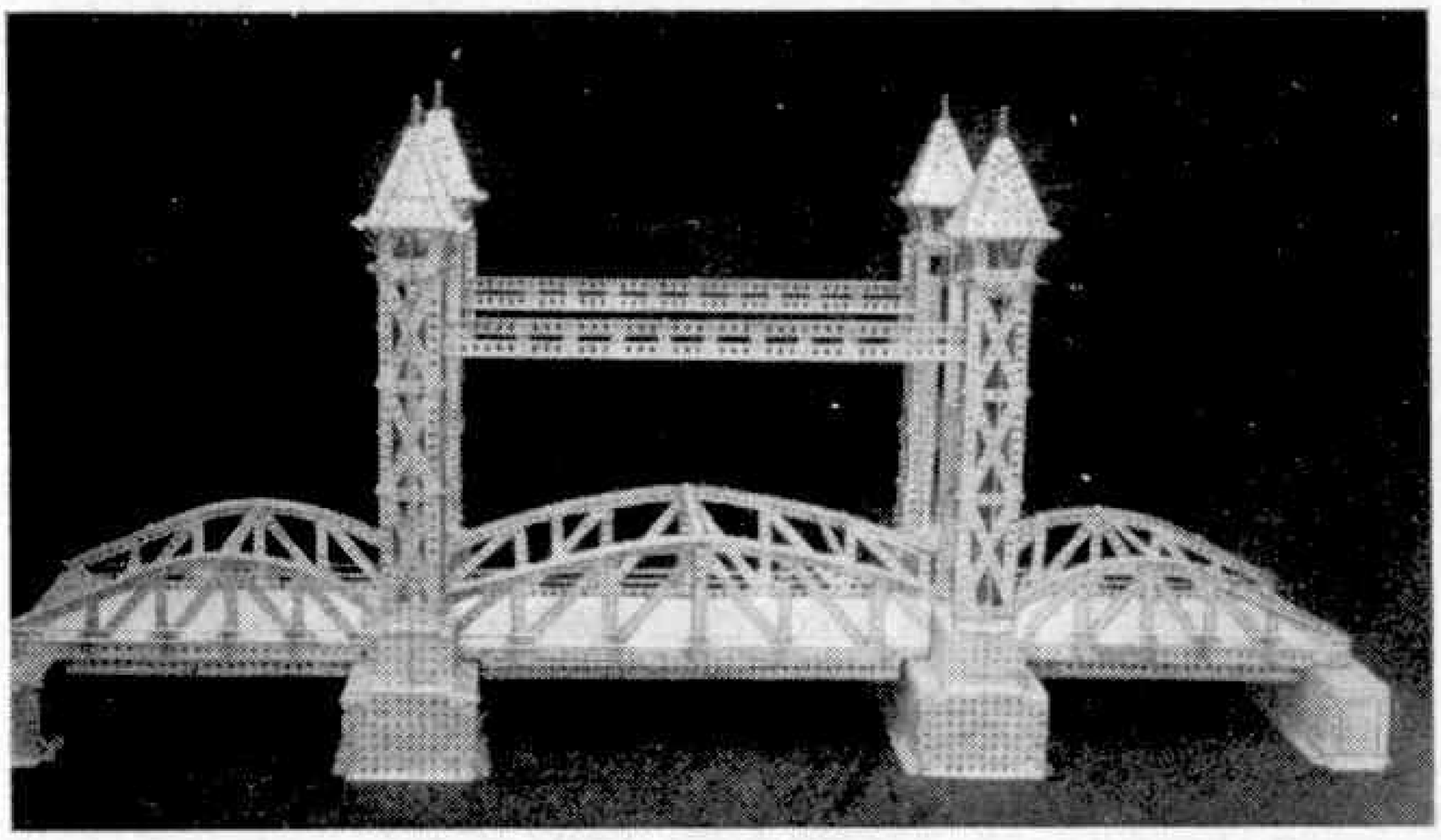


Fig. 7. This bascule bridge built in Meccano makes use of some of the different types of girders described in this article.

Girders are bolted to, or used to support other parts. The value of this adjustment is shown clearly in Figs. 5 and 6, which represent sections of Angle Girders bolted together to form channel or U-section girders. In Fig. 6 the round holes of one Girder are placed over the elongated holes of the other. This is the correct method of assembly, and if a Rod is passed through the flanges of a channel girder made in this way it can be set at right-angles to the girder. The dotted line represents the Rod. In Fig. 5 the elongated holes of the Girders are placed together, and it will be seen that in this case the Rod is thrown out of line when it is passed through the flanges. Short Strips should be bolted over the elongated holes of Angle Girders when Rods are passed through them.

The type of girder most frequently used in bridge construction is one shaped like a letter I. In these girders the horizontal plates are called "flanges," while the vertical sections are known as "webs." An I-section girder can be made very easily with Meccano as shown in Fig. 10. In this example the flanges are each made from two Angle Girders, while the web is a Flat Girder. An even stronger I-section girder can be made by increasing the depth of the web, as in Fig. 9. In this example the web consists of two Flat Girders bolted together. I-section girders are particularly useful for the main longitudinal members of bridges.

Other girders commonly used in bridge construction are T-section and channel or U-section girders, and their Meccano counterparts are shown in Figs. 1 and 3. The type of girder shown in Fig. 2 is in the form of an x. This type is not used so frequently as those already mentioned, but it is valuable in cases where the structure has to withstand bending strains acting in different directions.

Generally girders are used for every part of a bridge or other structure that has to resist a compressive force. Those parts of the structure that are in tension do not need to be so sturdy and can be of lighter material and weight. An example of this arrangement in the form of a simple roof truss is shown in Fig. 4. The sides 1 are made from Angle Girders, as they are in compression, but for the side 2 Strips can be used as this is in tension. The rigidity of the triangle formed by these sides is ensured by adding struts and ties at 3 and 4.

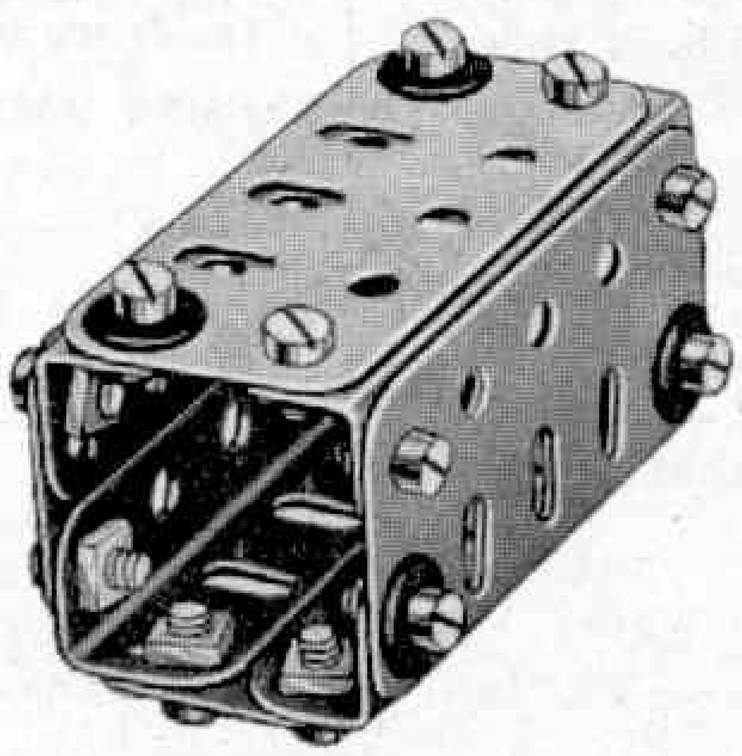
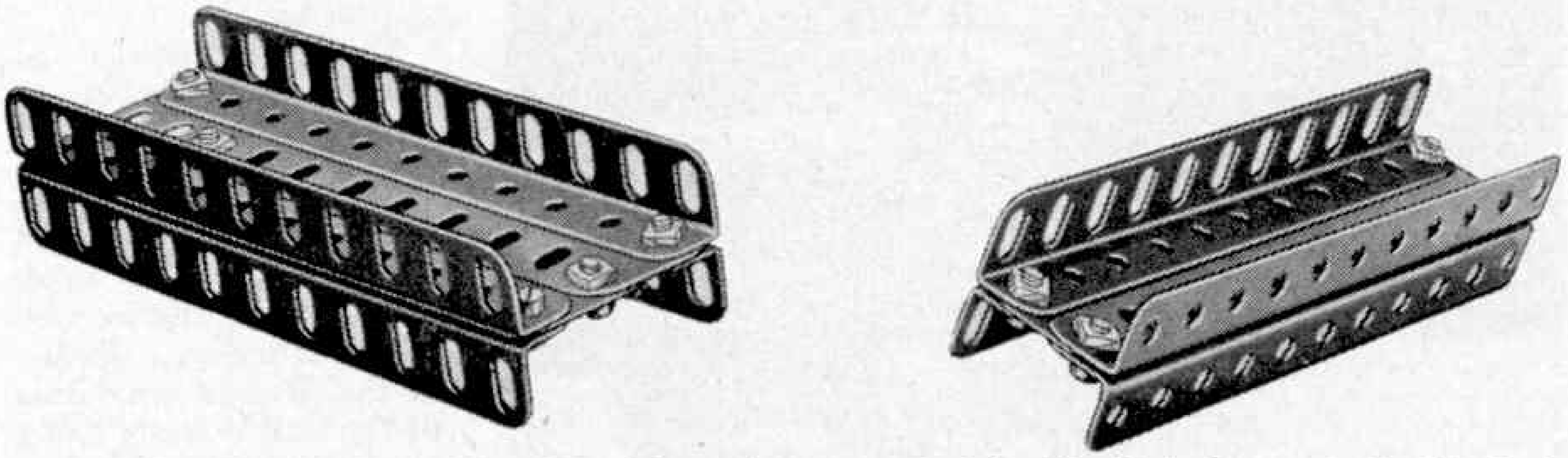


Fig. 8. A box-section girder capable of resisting great bending forces.

A built-up girder suitable for the side member of a bridge is also shown in Fig. 4. This is really an I-shaped girder with a very deep web, the upper and lower flanges being formed by Angle Girders. In this case however, the flanges are connected by a series of Strips instead of a solid web, as this construction saves material and reduces the weight of the complete girder. Diagonal Angle Girders are bolted between the flanges to brace the structure.

Another girder used frequently in engineering structures is in the form of a complete box-section, as shown in Fig. 8. Box girders of this type are capable of withstanding enormous bending stresses. Some of them have been made to such large dimensions that a railway train can run through them! In effect these huge box girders form a bridge by themselves, and an excellent example of this is provided by the famous Britannia Tubular Bridge over the Menai Straits, North Wales.

A good example of the use of various kinds of girders in Meccano bridge construction is shown in Fig. 7.



Figs. 9 and 10. Two examples of I-section girders. The one on the left will withstand a greater bending load owing to its deeper web.

Winter Model-Building Competition

Handsome Prizes for Jones KL66 Mobile Crane Models

ONE of the most popular of the many different light mobile cranes in use in industry today is the Jones KL66 Crane manufactured by George Cohen Sons and Company Ltd., London. This fine machine, which is shown in Fig. 1 on this page, possesses many special mechanical features, and its compact and clean design gives it a most attractive appearance.

The KL66 Crane makes a splendid subject for a Meccano model, and therefore we have chosen it as the basis for an important Model-Building Competition that we are organising during the Winter months. In this Competition Messrs. George Cohen Sons and Company Ltd. and Meccano Ltd. jointly are offering Prizes to a total value of over £100 for the best-built and most realistic models of the KL66 Mobile Crane built in Meccano by readers of the *M.M.* Full details of these fine prizes are given in the panel on this page.

This attractive Competition is open to model-builders of all ages living in any part of the world, and entries can be sent in at any time up to 28th February next.

The accompanying illustrations of the KL66 Crane, and the details that follow, will provide intending competitors with all the information and guidance they require to build their models.

It is not expected of course that competitors will be able to include all the finer features and exact mechanical details of the KL66 in their models. It is necessary only that models should have an outward appearance and main proportions as similar as possible to those of the actual crane as it is shown in Figs. 1 and 3, and that the main mechanical details and layout of the mechanism be copied as closely as possible.

Models should of course be capable of carrying out the essential movements of a crane of this kind, including hoisting and lowering of the load, swivelling of the jib and superstructure, luffing of the jib and travelling of the entire crane along the ground. Model-builders are free to

Fig. 1. The Jones KL66 Mobile Crane.

JONES KL66 MOBILE CRANE COMPETITION

THE PRIZES

The following Cash Prizes will be awarded in Sections A and B of the important model-building Competition announced on this page.

Section A (for competitors under 15 years of age on 28th February 1955).

	£	s.	d.
First Prize, Cheque for	10	0	0
Second Prize, Cheque for	5	0	0
Third Prize, Cheque for	3	0	0
Fifteen Prizes, each of a Cheque for	1	0	0
Fifteen Prizes, each of a Postal Order for	0	10	0

Section B (for competitors over 15 years of age on 28th February 1955).

	£	s.	d.
First Prize, Cheque for	15	0	0
Second Prize, Cheque for	8	0	0
Third Prize, Cheque for	5	0	0
Fifteen Prizes, each of a Cheque for	1	10	0
Ten Prizes, each of a Cheque for ..	1	0	0

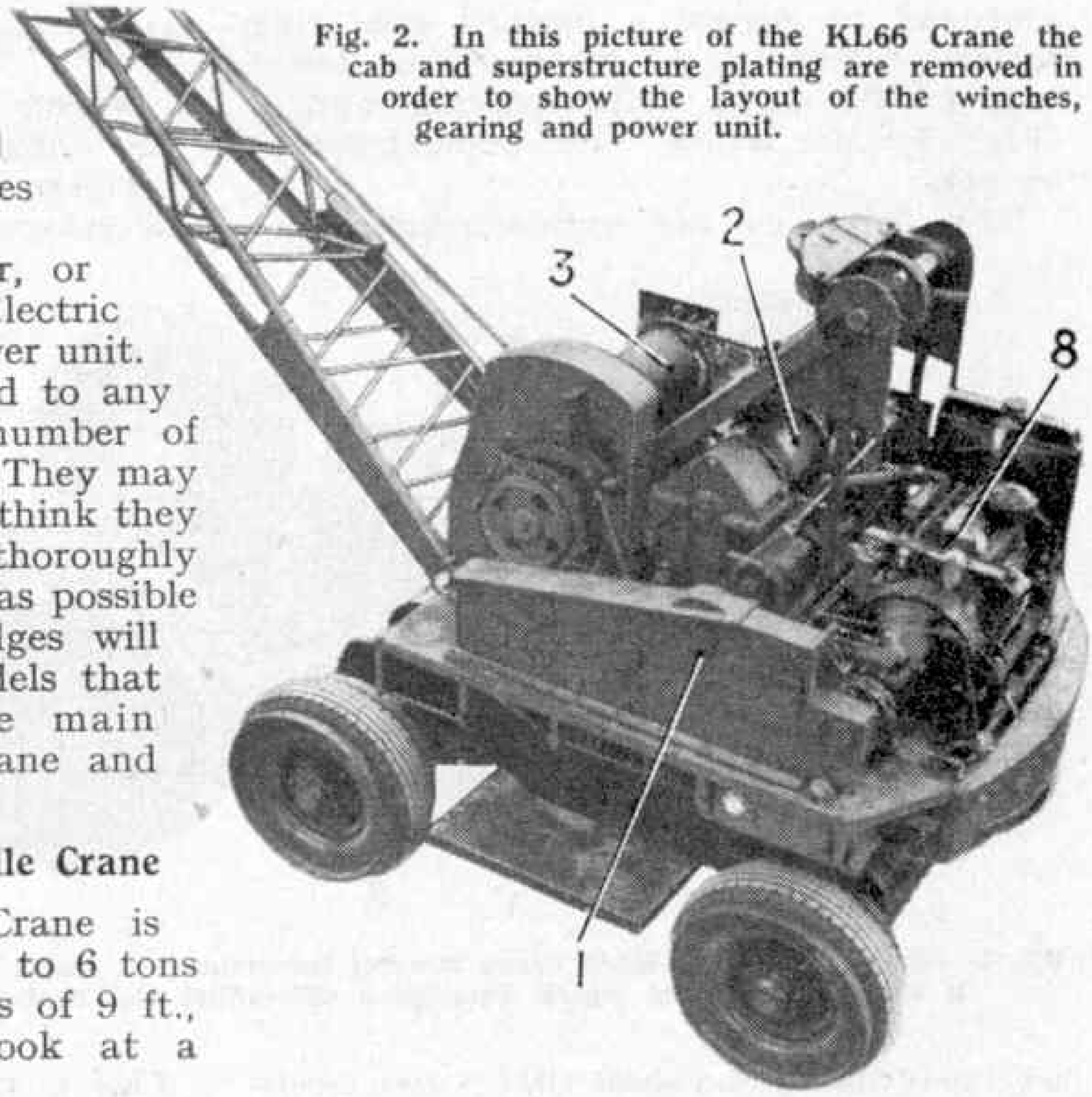
CLOSING DATE FOR ENTRIES—
28th FEBRUARY 1955.

devise their own mechanisms for providing these movements, but they should try to follow those used in the real crane as closely as their resources allow.

A Meccano Clockwork Motor, or better still one of the Meccano Electric Motors, may be used as the power unit.

Competitors are not restricted to any particular size of Outfit or number of parts in building their models. They may use just as many parts as they think they need to make their models thoroughly sturdy, realistic and as faithful as possible to the actual crane. The judges will award the Prizes to those models that reproduce most closely the main mechanical features of the crane and its external appearance.

Fig. 2. In this picture of the KL66 Crane the cab and superstructure plating are removed in order to show the layout of the winches, gearing and power unit.



Details of the Jones KL66 Mobile Crane

The Jones KL66 Mobile Crane is designed for lifting loads of up to 6 tons with the load hook at a radius of 9 ft., or lighter loads with the hook at a greater radius.

The standard crane, which is shown in our illustrations, has a swan neck lattice jib that is available in lengths from 20 to 50 ft. according to requirements. Other special types of jibs also can be supplied.

The power unit of the KL66 is a 4-cylinder Diesel engine developing 37 b.h.p. at 1500 r.p.m. This provides all the power required for travelling the crane, load hoisting, slewing of the jib and superstructure, and derricking or luffing of the jib. All the various motions are fitted with individual brakes, and those for the road wheels are of the Girling type and are operated by a foot pedal. A hand brake is also provided for use when parking the crane.

From the engine the drive is taken through a clutch to a 3-speed gear-box, the output shaft of which is connected by a flexible coupling to a main drive transmission or distribution unit 1, Fig. 2, which is totally enclosed. From this, separate drives are taken by flexible couplings to the jib derricking drum 2 and to the load hoisting drum 3. Separate clutches for raising and lowering are provided for each of these drums, and each of them is controlled by a brake operated from the cab by levers.

The transmission unit provides also two other drives, one to the undercarriage and the other for slewing the jib and superstructure. The slewing drive operates a pinion mounted below the superstructure and

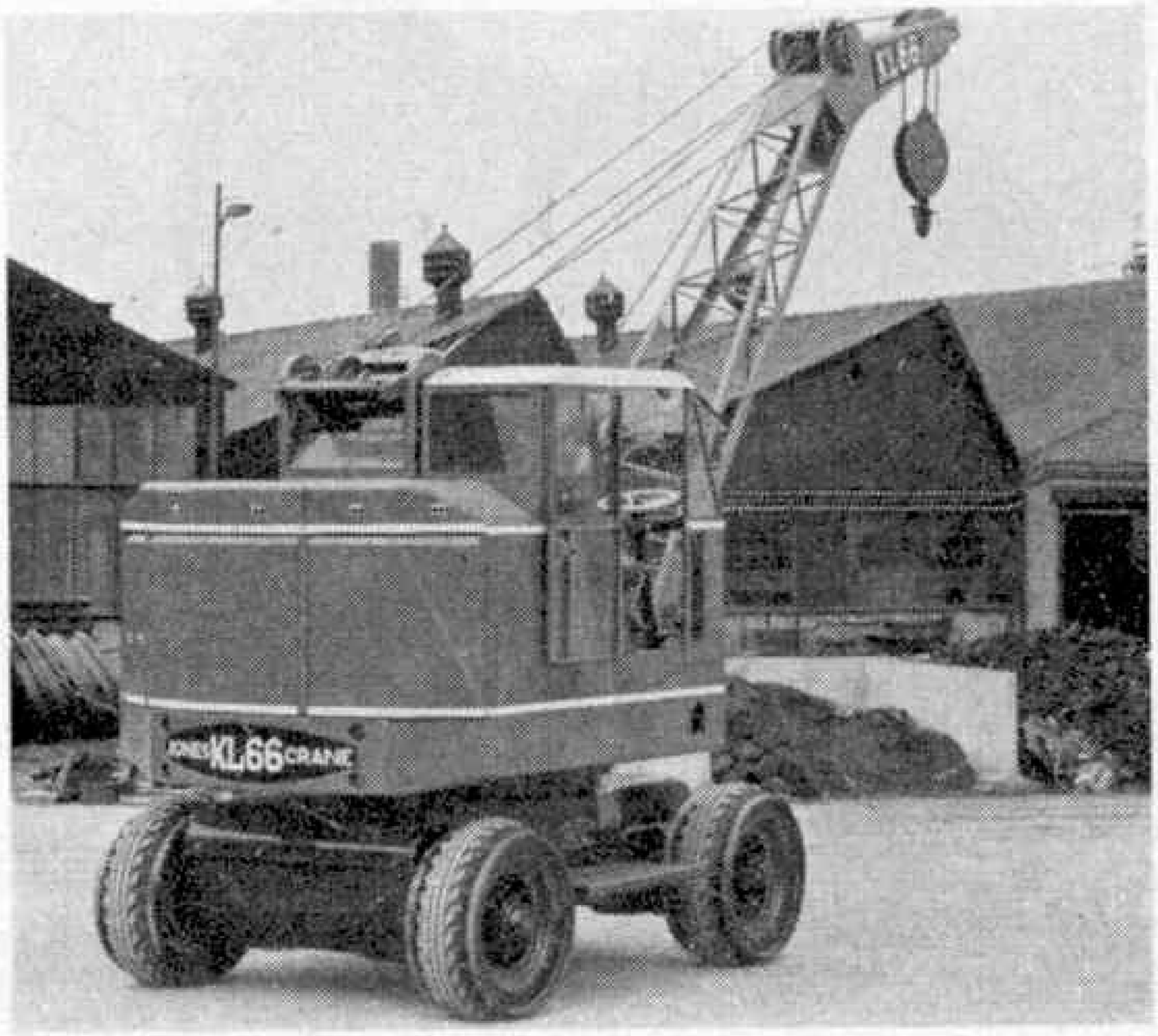


Fig. 3. The Jones KL66 Mobile Crane seen from the rear.

arranged to engage a toothed gear ring formed internally in the fixed or lower race of the large roller bearing unit 4 (Fig. 1) on which the superstructure swivels.

The drive to the undercarriage road wheels is taken by a shaft that passes freely through the centre of the superstructure into the chassis (Fig. 4). A gear on the lower end of this shaft drives the crown wheel of a differential unit 5, and sprockets 6 on the differential half-shafts are connected by four separate chains to the four travelling wheels. The drive to the steerable wheels is taken through universal joints to permit these wheels to pivot.

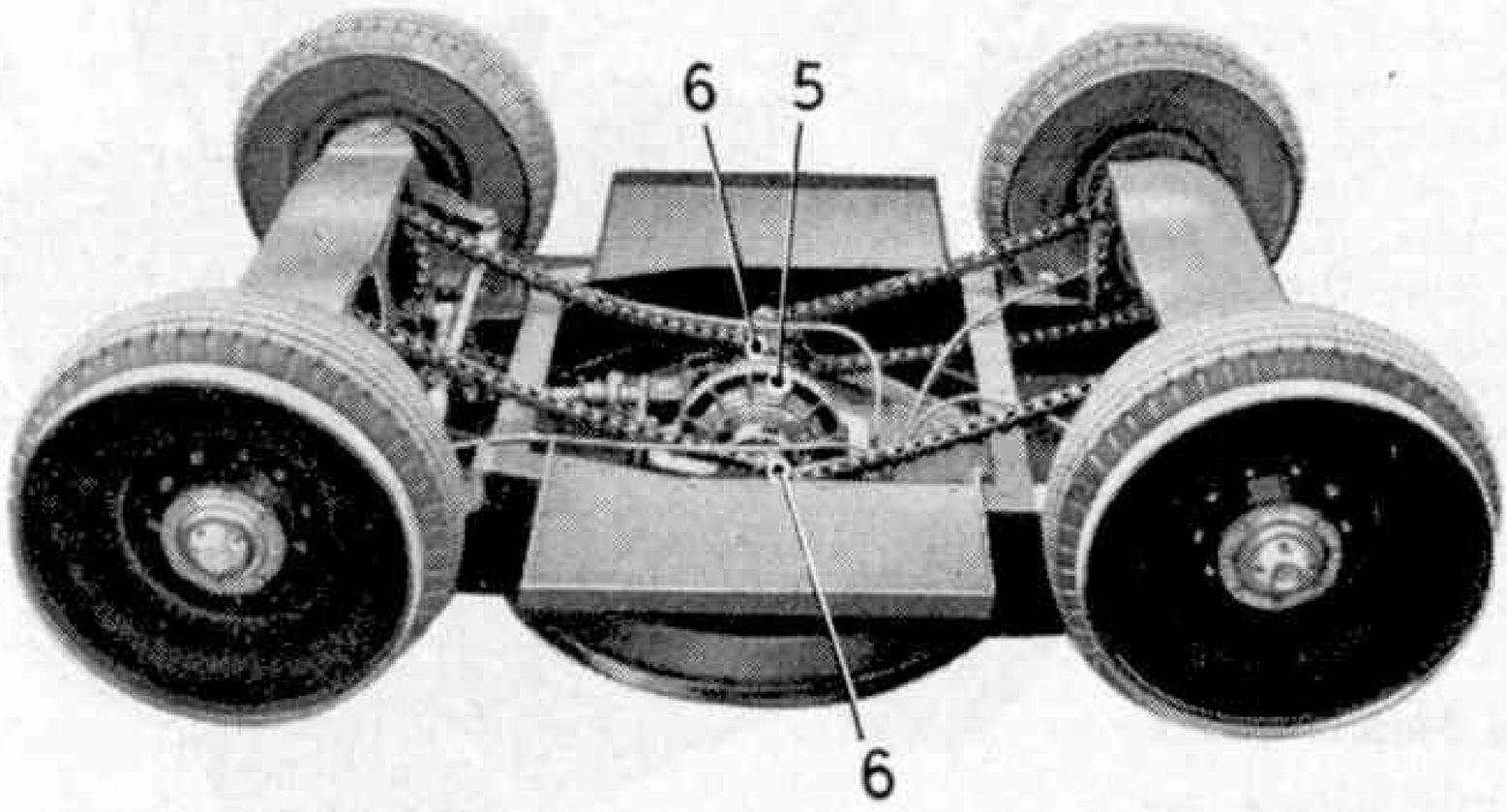


Fig. 4. The chassis of the KL66 Crane showing the manner in which the drive is taken to the road wheels through a differential and chains.

The method of steering used in the actual crane is not really suitable for reproduction in Meccano on a scale sufficiently small for a model, and competitors may use any system they can devise for this purpose. Alternatively the steering arrangement may be entirely omitted, but models that include some form of steering will receive additional marks from the judges.

The hoisting winch can be seen at 3 in Fig. 2, mounted near the front of the superstructure. The derricking or luffing winch 2, which is of slightly smaller size, is placed centrally behind it. The engine, clutch and gear-box form the compact unit 8 that is mounted transversely at the rear end of the superstructure in Fig. 2. The main drive transmission or distribution unit 1, is placed along the left-hand side of the superstructure. These are all the main features with which model-builders need be concerned.

HOW TO SEND IN YOUR ENTRY

When you have completed your model the next thing is to obtain either photographs or drawings of it. It is not necessary for these to be your own work. You should then write a short description of the model, mentioning its chief constructional features, and send this, together with the photographs or drawings, to *"Jones KL66 Crane Competition, Meccano Ltd., Binns Road, Liverpool 13." Actual models must not be sent.*

Before posting your entry, however, you must be sure to write your name and address, and your age on the 28th Feb. next, on the back of each photograph or sheet of paper you send. *This is most important.*

CLOSING DATE

Both Sections of the Competition will remain open for entries until 28th February 1955. Any entries received after that date will not be eligible.

The entries will be judged by Messrs. George Cohen Sons and Company Ltd. and Meccano Ltd., jointly, and each prize-winner will be notified personally as soon as possible after the closing date.

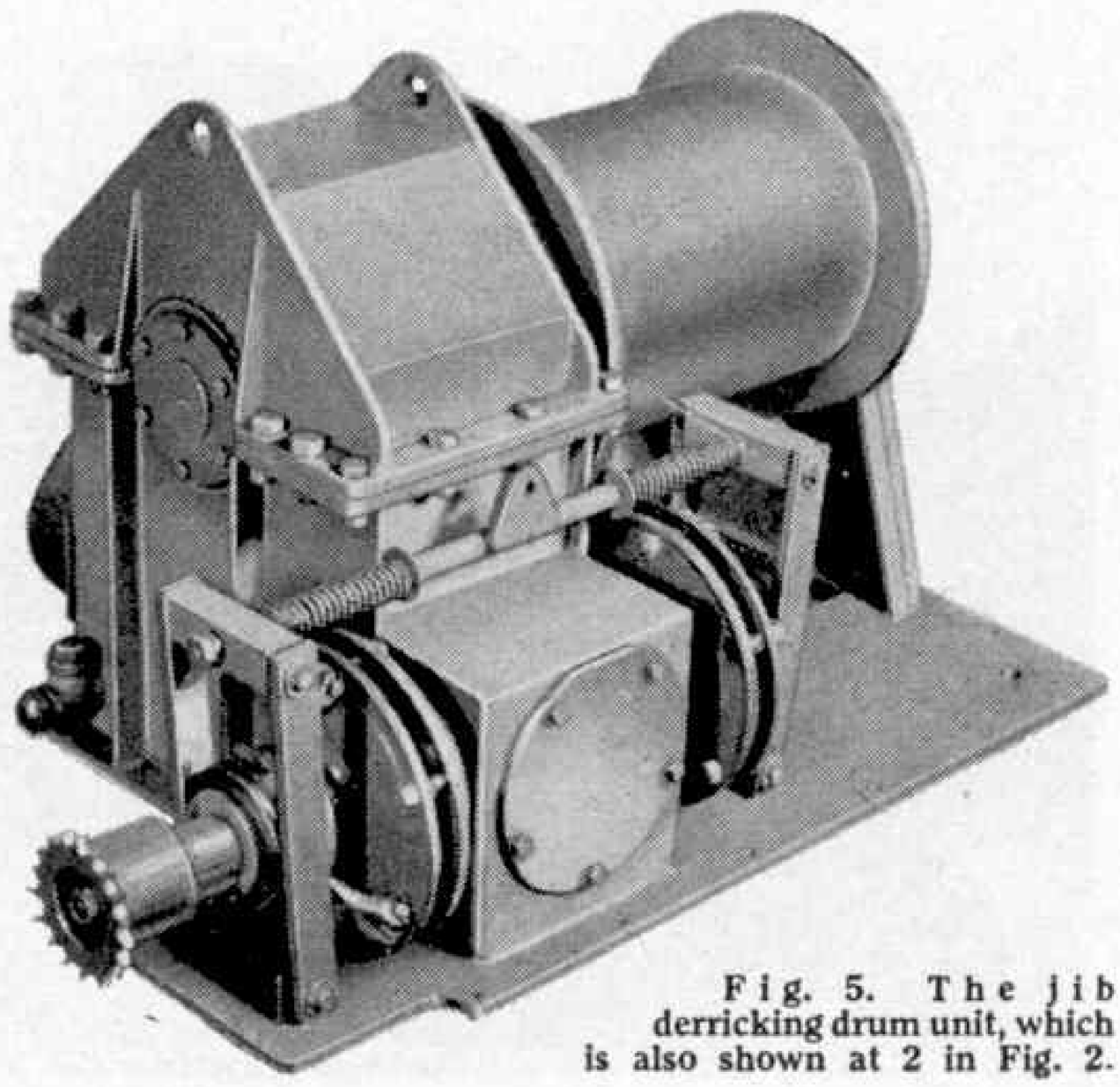


Fig. 5. The jib derricking drum unit, which is also shown at 2 in Fig. 2.

Club and Branch News

WITH THE SECRETARY

EXHIBITION JUDGING

Club exhibitions to which parents and friends of members are invited are always an outstanding event in the Club programme, and it is customary to award prizes for the best models in order of merit. A Club Leader mentioned in a recent letter to me that he always arranges for exhibition models to be judged by a visitor. This is a very good idea, as it removes the judging from any suspicion of favouritism, as can be the case if the awards are based upon the judgment of the Leader himself.

A good point about having models judged at the beginning of an exhibition is that members are saved the suspense of waiting to know if their model has won a prize, and the prize-winners can have a card announcing their success displayed in front of their model throughout the exhibition.

If someone with a knowledge of engineering principles can be obtained to judge the models so much the better, as Meccano is, after all, "engineering in miniature", and the judging of the models by a person so qualified gives the awards an extra touch of authority. The actual prize-giving can be made the centre of a nice little ceremony announced to take place at a certain time during the exhibition.

Sometimes, by way of a change, the judging of the models can be left to the visitors, who are invited to record their vote after inspecting the display. The ballot is closed at a pre-arranged time that allows an ample margin for the votes to be counted, the results announced and the prizes presented before the exhibition closes.

Finally, do not forget to send a concise report of the event to the local newspaper, in the hope that the Editor will find room for it and in this way give the Club a very useful "boost".

CLUB NOTES

Mile End (Portsmouth) M.C.—Outdoor activities during the latter part of the summer included a most enjoyable cruise in the Solent, during which the Secretary pointed out places of interest, including Fawley, Hamble, and Southampton Docks. Several liners were seen during the cruise. A further visit has been paid to Camber Docks. Earlier in the year an excellent display was staged in a local shop window, with Meccano models, the model town and the Branch layout. Meccano working models which visitors were allowed to operate for themselves were a great attraction. Club roll: 52. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

Launceston M.C.—Meetings are well attended, and an interesting programme is being followed. A day trip to Polzeath recently, when parents and friends of members were included in the party, was a great success. Club roll: 45. *Secretary:* R. J. Keast, "Lytham," Dunheved Road, Launceston, Cornwall.

AUSTRALIA

Fremantle and District M.C.—Mr. F. E. S. Hamersley has resigned from the Leadership of the Club owing to pressure of other work, and has been succeeded by his brother, Mr. J. W. Hamersley, who has played an important part in the running of the Club since its formation. Club roll: 12. *Secretary:* G. Shea, 12 Foss Street, Palmyra, Western Australia.

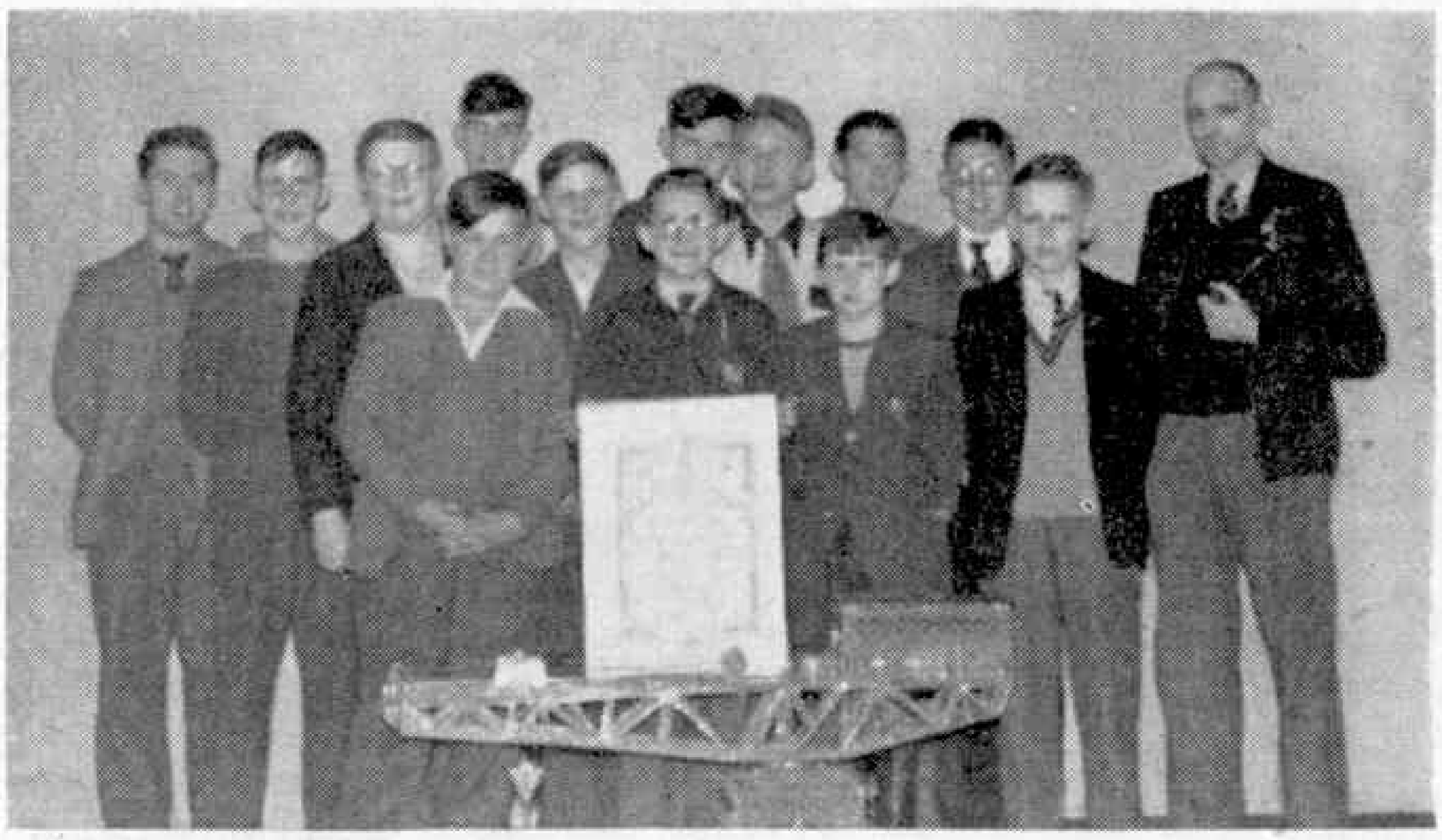
Maylands M.C.—Members have been kept busy building models for several important Exhibitions held recently. The many fine models completed for these events included two original subjects, a bulldozer and a tipping truck, which attracted much attention. The Meccano loom has been completed and is working very effectively. Club roll: 45. *Leader:* Mr. V. Malmgreen, 16 Kennedy Street, Maylands, Western Australia.

NEW ZEALAND

Christchurch M.C.—A Mystery Model evening with a mobile crane as the subject produced some novel ideas on the workings of a crane. An indoor sports night was good fun and provoked some keen competition. *Secretary:* Mr. M. Fraer, 115 Ruskin Street, Spreydon, Christchurch S.1, New Zealand.

BRANCH NEWS

Hale End (London)—Members have greatly enjoyed several interesting outings to points of railway interest. Places visited have included Stratford Motive Power Depot, and King's Cross and Hornsey depots. During the King's Cross visit members were allowed on to the footplate of an A4 "Pacific", and "would-be" engine drivers had the thrill of being permitted to sound the whistle and go through the corridor tender. At some depots apparatus such as the mechanical coaling plant was demonstrated. *Secretary:* A. L. Coe, 463 Hale End Road, Highams Park, London E.4.



Officials and members of the Consett Y.M.C.A. M.C. with Mr. John R. Goodrum, Leader, on the extreme right and N. Barron, Secretary, in the centre foreground. Mr. D. A. Osborne, Deputy Leader and also Chairman of the Consett H.R.C. Branch, is on the extreme left. This enthusiastic and flourishing Club and Branch holds the interest of its members with attractive and varied programmes in which, of course, Meccano model-building and Hornby Train operations have a prominent part.

HORNBY RAILWAY COMPANY

The New Hornby-Dublo Tank Locomotive

By the Secretary

I NEED scarcely tell you that the engine in the accompanying pictures is the new Hornby-Dublo B.R. Standard 2–6–4 Tank, the locomotive that so many of you have been waiting for eagerly for some time. The fact that this was to be added to the System has been something of an open secret for some months, and now its appearance has created great excitement and enthusiasm among Hornby-Dublo owners. It is not often that I am able to announce a new engine, and I can assure you all that I am as delighted to do so as you will be to see it and to introduce it on your layouts.

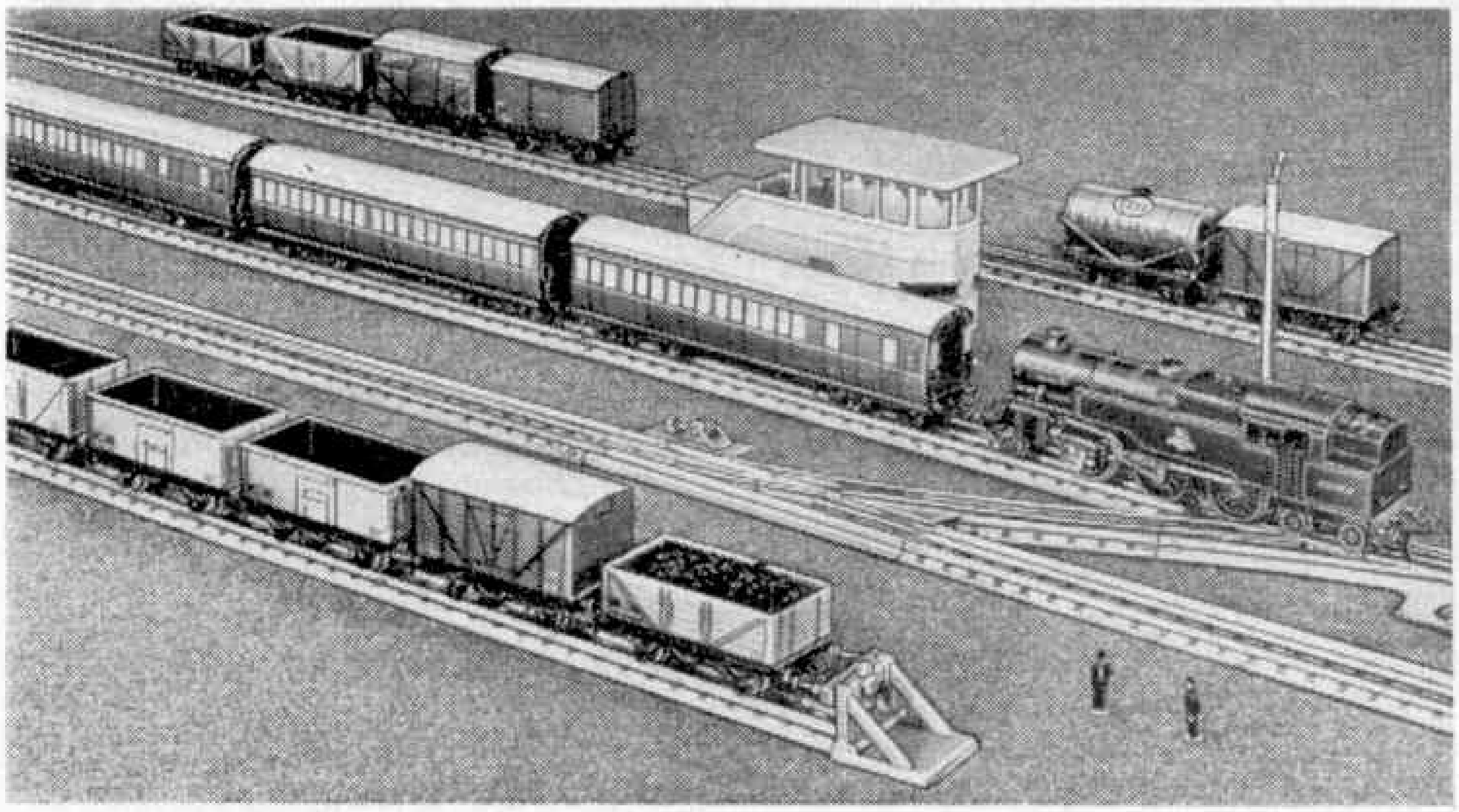
If you examine the pictures, or better still if you examine an actual engine, I am sure that you will agree that this is of the very high standard already attained in Hornby-Dublo Locomotives. The characteristic lines of the sturdy B.R. 2–6–4 tanks of the 800XX series have been captured very well and there is a wealth of accurate detail that will delight the miniature locomotive enthusiast. The dies for producing this locomotive have been designed specially to make possible more "on top" details than usual, and the casting is carried out in a new high-pressure machine installed in the Meccano Works at Speke, which were described by the Editor last month in his article on the making of Dinky Toys.

This "on top" detail is worth noting, and I have had the special picture of the new locomotive on the opposite page prepared to show it. Along the tank tops, which are correctly recessed, we find accurate and beautifully sharp representations of the water filler lids, the tank stays and the manhole covers. The top of the tapered boiler barrel is equally attractive, with its feed clacks and pipes, and washout holes. The fire-box carries a faithful representation of the steam manifold and piping and the cab roof has its dummy sliding ventilator.

Looking at the locomotive generally, it will be seen that the standard B.R. front-end arrangement of foot framing, with its steep incline immediately in front of the smoke-box, is carefully followed and the steps and main frame extensions are reproduced. Alongside the smoke-box are the steam pipe covers, vacuum ejector pipe and, just ahead of the tanks, the mechanical lubricators. The slightly curved profiles of the side tanks and cab are reproduced exactly. At the trailing end the bunker sides taper inward, and the built-up and set-in bunker top is provided with a very nicely-packed load of "coal."

The new Hornby-Dublo 2-6-4 Tank Locomotive has a sturdy, realistic appearance as is well shown in this illustration.

The motor unit follows the usual Hornby-Dublo practice. Special care has been taken to reproduce the outside cylinders and motion in a robust and pleasing manner. The driving wheels themselves have been specially designed for this model and they incorporate the characteristic heavy-looking square-ended balance weights that are so noticeable on the real ones. Those of you who are interested in motor design will like to know that the gear ratio of the motor has been slightly altered from the previous Hornby-Dublo standard of 15 to 1. The



A suburban train of the new Compartment Coaches in charge of the new 2-6-4 Tank running bunker first.

figure is now 18 to 1. This is not a big change, but one that has its advantages in smoother starting and stopping. Ultimately, too, this gear ratio will be used for all Hornby-Dublo locomotives.

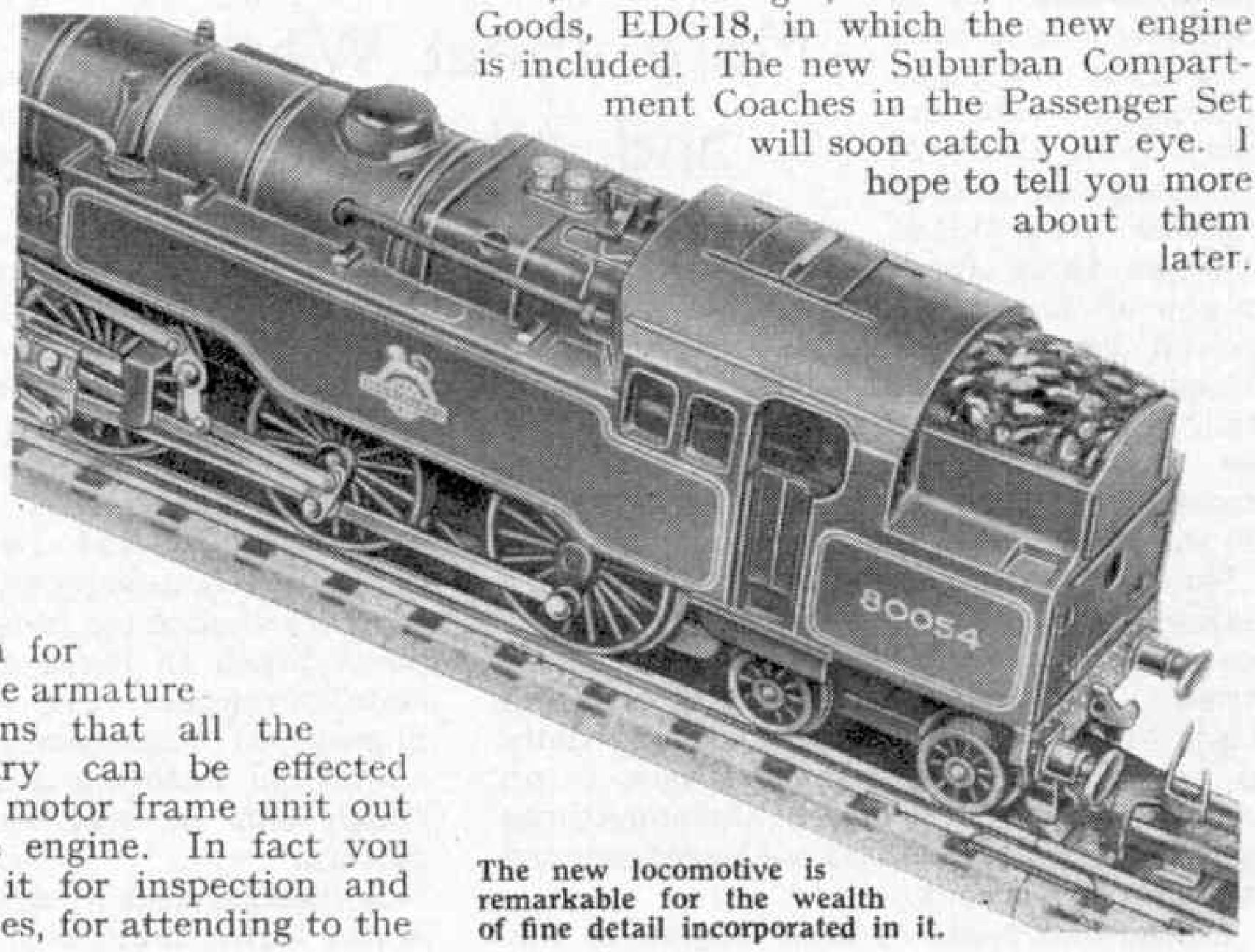
We all like our engines to be absolutely under control, and to run well slow as well as fast. This has been kept in mind in designing the new locomotive, which is provided with what is known as a variable shunt to achieve this. According to its adjustment, this has the effect of improving the slow speed or high speed characteristics of the motor as required. This shunt is adjusted by means of a screw, access to the latter being gained through a hole provided specially for the purpose in the rear of the bunker that can be seen in the lower picture on this page. The setting therefore can be changing without the necessity for dismantling the engine by removing the motor unit from the housing.

Another step forward is the provision of a self-lubricating bush for the top bearing of the armature spindle. This means that all the lubrication necessary can be effected without taking the motor frame unit out of the body of the engine. In fact you need only remove it for inspection and renewal of the brushes, for attending to the commutator, or for brush cleaning purposes, for which a very handy weapon is one of Father's pipe cleaners.

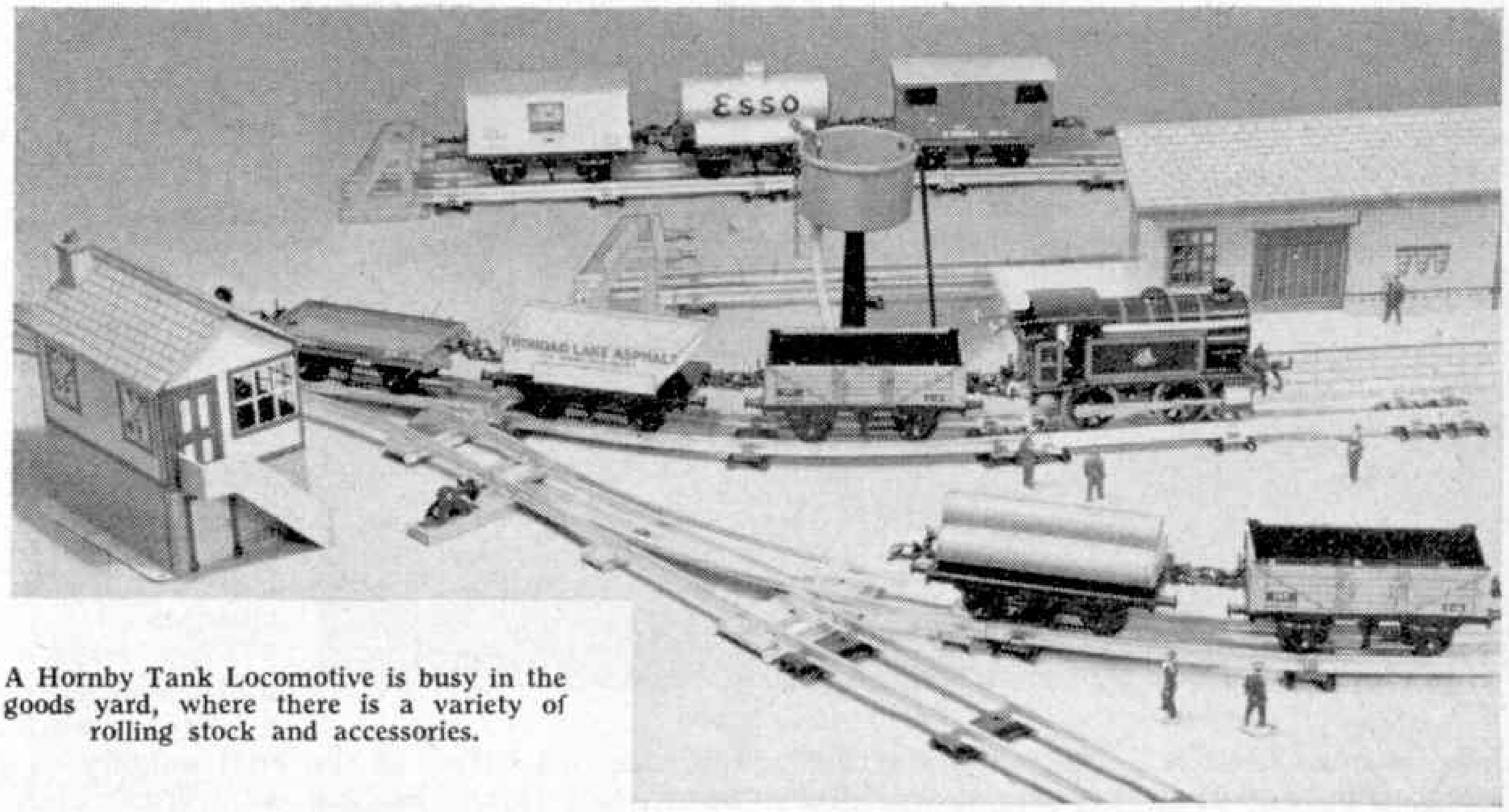
The automatic couplings at front and rear are not fitted to the engine body or frame, but to the leading pony truck and the trailing bogie respectively. Thus the couplings are "centred," or follow the track, and so they are always in a favourable position to engage the couplings of a waiting coach or wagon.

Now what about running with the new tank. I have "driven" one of them and I found its performance to be really first class. The excellent slow running proved a great help to gentle handling when approaching its train to couple up, and in getting it away to an easy and realistic start.

By the time that you read this, you may already have seen the new Train Sets, one Passenger, EDP13, and the other Goods, EDG18, in which the new engine is included. The new Suburban Compartment Coaches in the Passenger Set will soon catch your eye. I hope to tell you more about them later.



The new locomotive is remarkable for the wealth of fine detail incorporated in it.



A Hornby Tank Locomotive is busy in the goods yard, where there is a variety of rolling stock and accessories.

More about Wagons and Accessories

HORNBY Rolling Stock has figured prominently in recent Hornby Railway articles, and last month I had something to say about several types of open wagons in the System. Now let us talk about some of the accessories in the Hornby range that help to make up the goods yard in which the wagons are usually found.

Our illustrations show a nice variety of Hornby Rolling Stock and several accessories. Let us deal with the rolling stock first. In the picture on this page there are several of the open type vehicles dealt with previously. But there is in addition the Flat Truck, which can be considered as a kind of open wagon, although its sides are lower than those of the usual run of such vehicles. Now this is just the thing for container traffic and, as you all know, it can be obtained with such a load ready mounted, or with a miniature cable drum as an alternative load. Loads of this kind sometimes involve the wagon travelling empty in one direction, so that it is not out of place for this to happen in miniature.

Nowadays Hornby Railway owners are making increasing use of the Flat Truck for the rail transport of Dinky Toys of suitable types. Tractors, farm implements and army vehicles can be seen practically daily on real railway wagons, so there is no reason at all why this topical and sometimes spectacular feature should not be reproduced on a Hornby layout.

Of the two types of tank wagons in this picture, the "Esso" Tank Wagon represents the familiar type of vehicle used for the carriage of petrol. Special rules regulate the working of such traffic, and one of them we can readily follow in miniature. This is to have our supposed-to-be "loaded" spirit tanks in the middle of their trains, where they are removed as far as possible from the results of either head-end or tail-end collision.

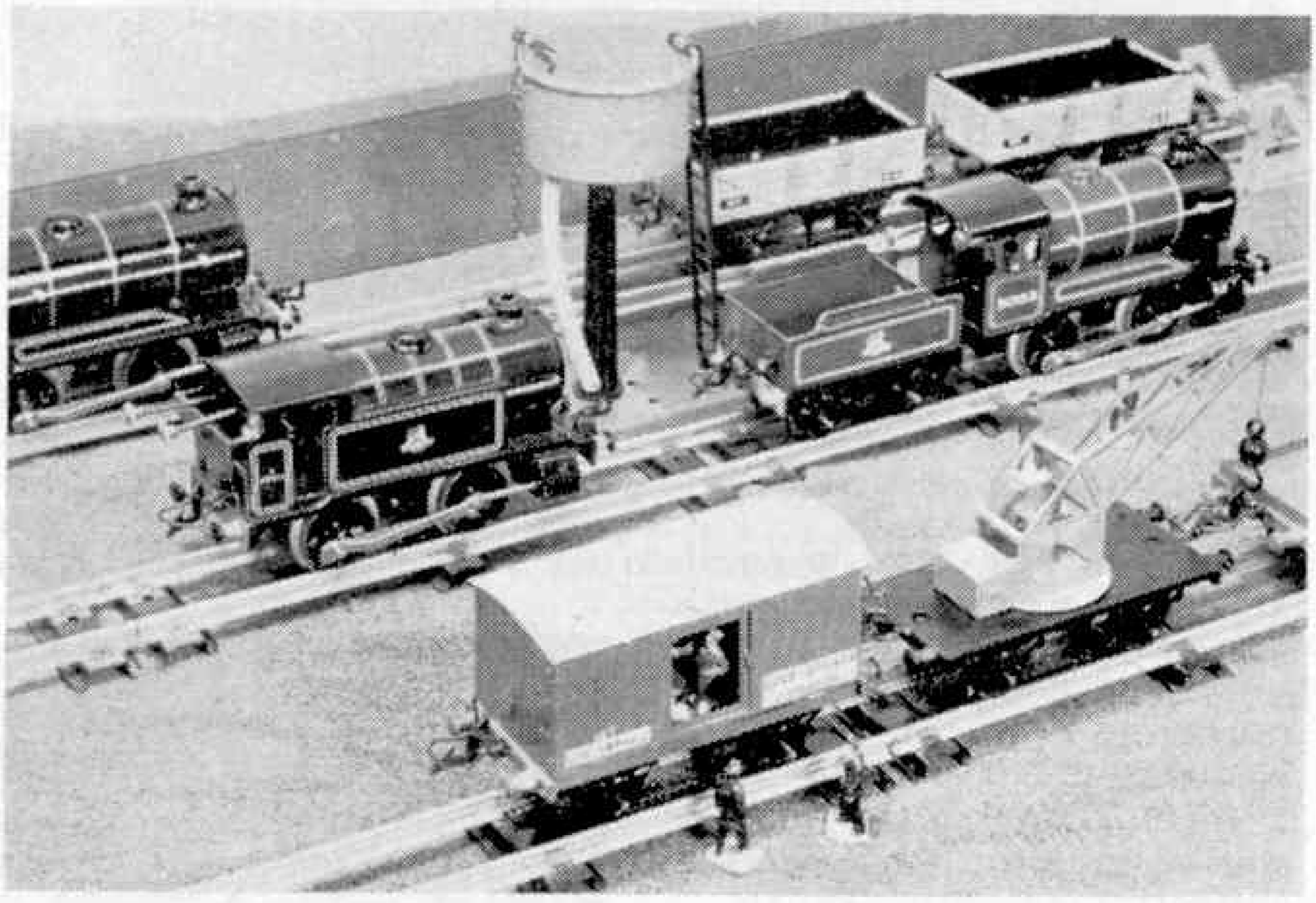
Another type of tank is represented by the Gas Cylinder Wagon. The real thing still has its uses, the chief of which is the conveyance of oil gas from the works, where it is produced, to the storage tanks at points where vehicles such as dining cars and so on require "gassing."

A Hornby Goods Van is shown in the upper illustration on the next page standing in a siding at a Locomotive Depot, where it represents the "stores van" often found in such places. This stores van is a vehicle worked from some central supply point to out-stations, bringing supplies, spares and repaired components required by the Depot. Special lettering usually distinguishes a vehicle on such duties, so here is a chance for those handy with a fine paint brush to mark a selected van in a suitable manner. The vehicle shown in the illustration has been marked with the additional lettering *Loco Stores, Horwich,* which can be seen on its right in the picture.

A familiar feature of a locomotive depot is the water tank, well represented in the

Hornby System by an effective model. See how good it looks in the two illustrations in which it appears! This is based on what is known in real practice as the "parachute" type of tank. The Hornby Water Tank is complete with ladder, flexible pipe and the operating chain.

In addition to its use in locomotive sidings, the Tank can often find a place in goods yards, at the end of the platform of a passenger station, or in fact anywhere where engines are likely to stand.



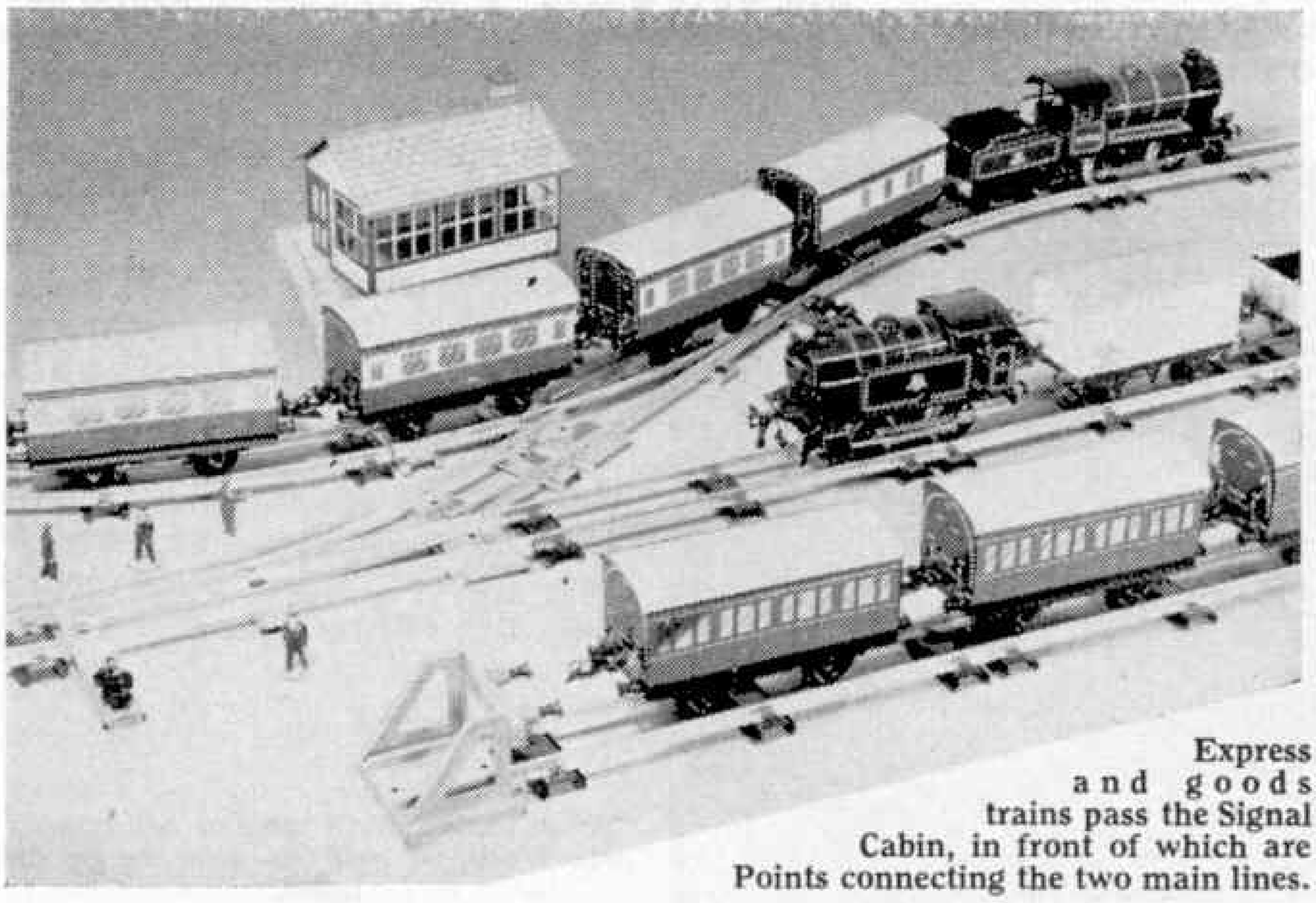
A busy engine yard scene, with several Hornby Locomotives at work and, in the foreground, a Goods Van used for stores purposes.

A goods yard of any importance really requires a goods depot in order to make it complete, and Hornby railway owners are well provided for in this respect. The Goods Platform itself is an "island," which makes it possible to use it between tracks if necessary.

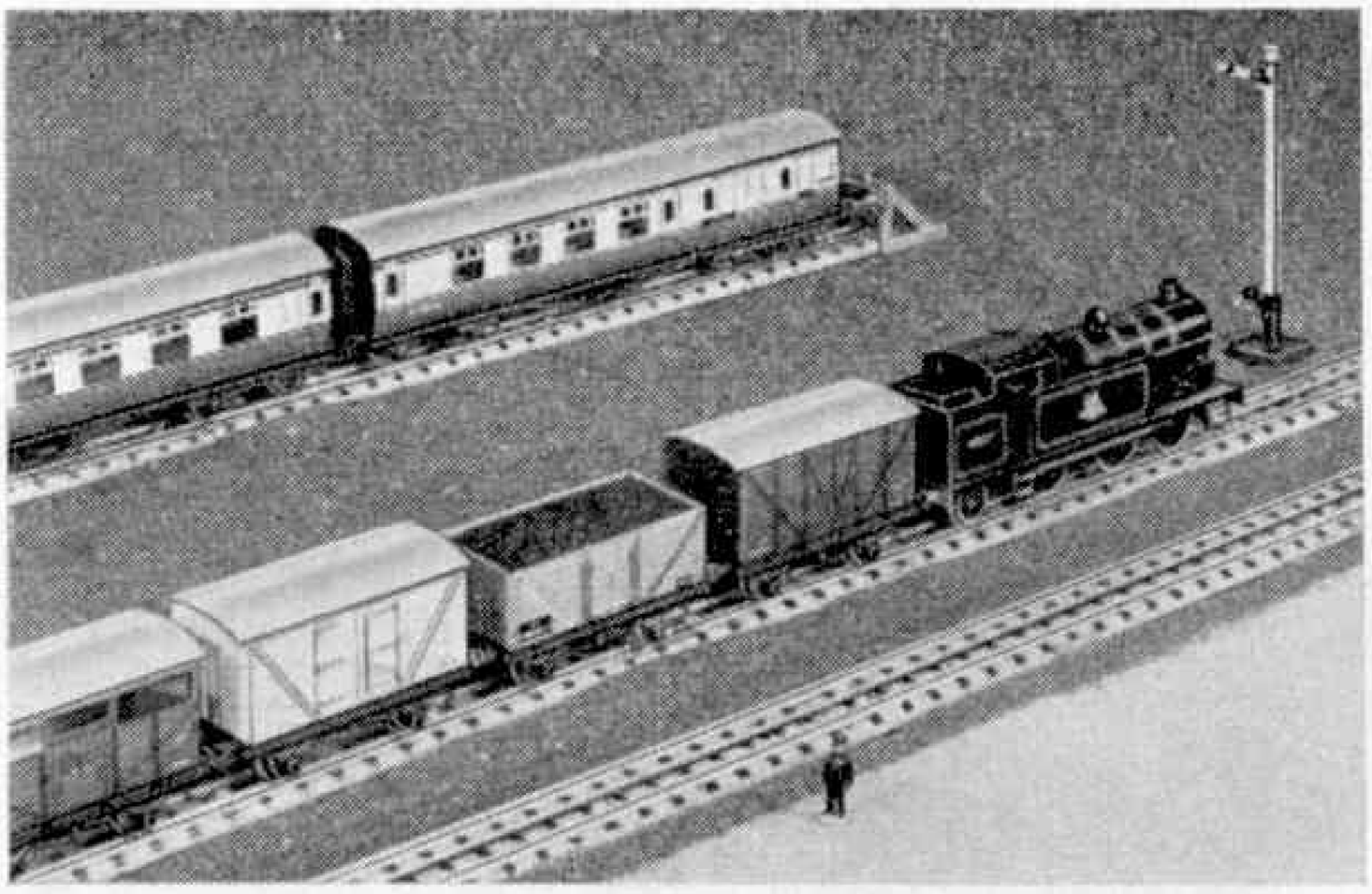
A useful piece of goods yard equipment is a crane, and a Hornby-Dublo owner has the choice of using either the Platform Crane, which has been familiar in the System for some time, or the more recent Goods Yard Crane, which is listed as Dinky Toys No. 973. In addition to these it is useful to have available a mobile crane such as the attractive Dinky Toys No. 971, the Coles Mobile Crane. On the other hand, for certain jobs a rail-borne crane may be necessary and this is where the Crane Truck of the Hornby System comes in.

Finally, we have the Buffer Stops, which imply the end of the journey. Hornby Buffer Stops fit up to the last length of rail in the siding, just like another piece of track, and when anchored firmly by means of the Rail Connecting Plate they form an effective check to any engine or vehicle that may get out of hand during shunting operations. The side frames supporting the actual buffer beam are well braced, but for additional security the Buffer Stop should be screwed down, if possible.

The Buffer Stop is often the first accessory that a beginner buys, but as it marks the end of a run it is fitting to conclude this talk with it.



Express and goods trains pass the Signal Cabin, in front of which are Points connecting the two main lines.



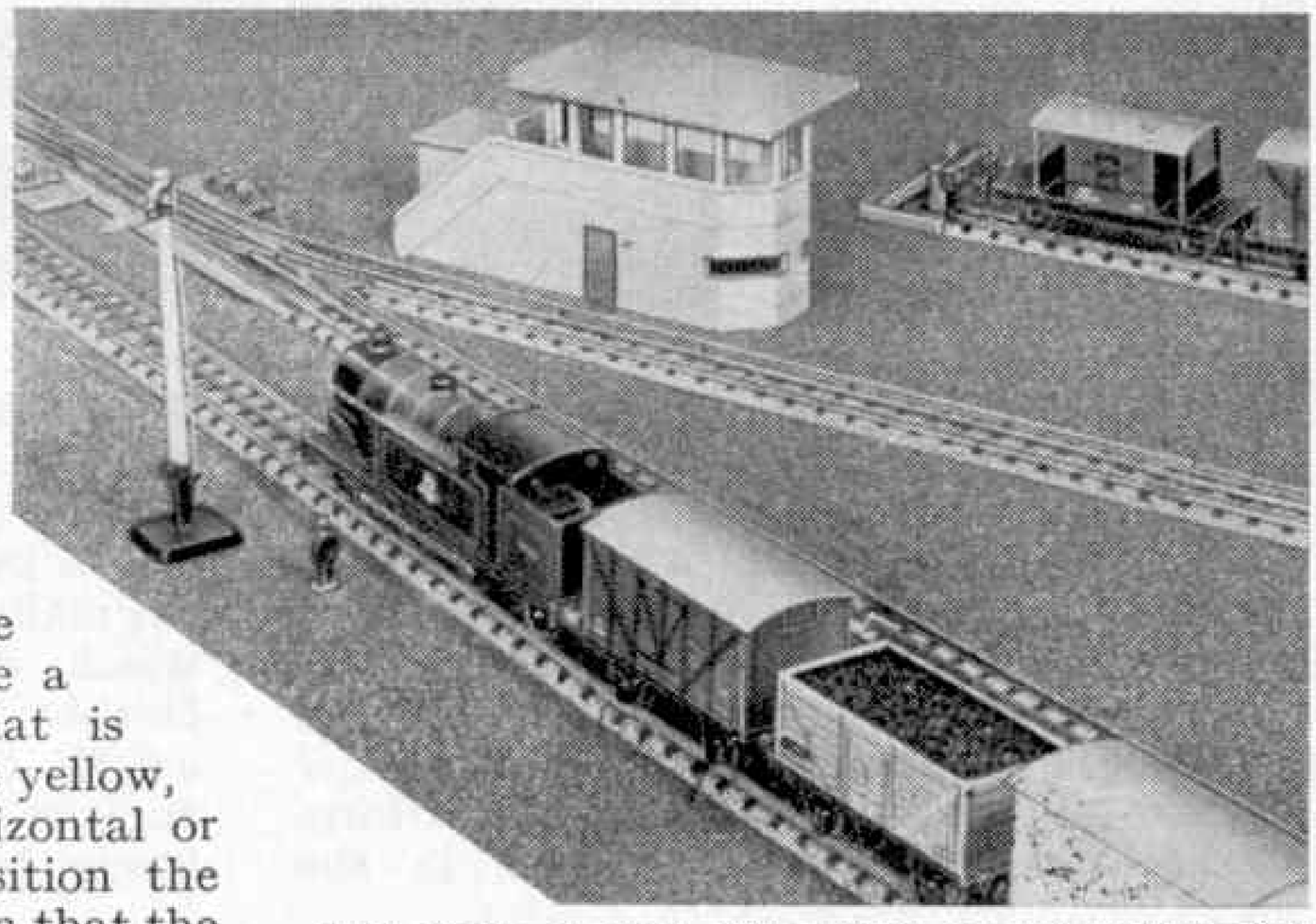
Distant on! Must be ready to stop at the Home Signal.

Hornby-Dublo Signals

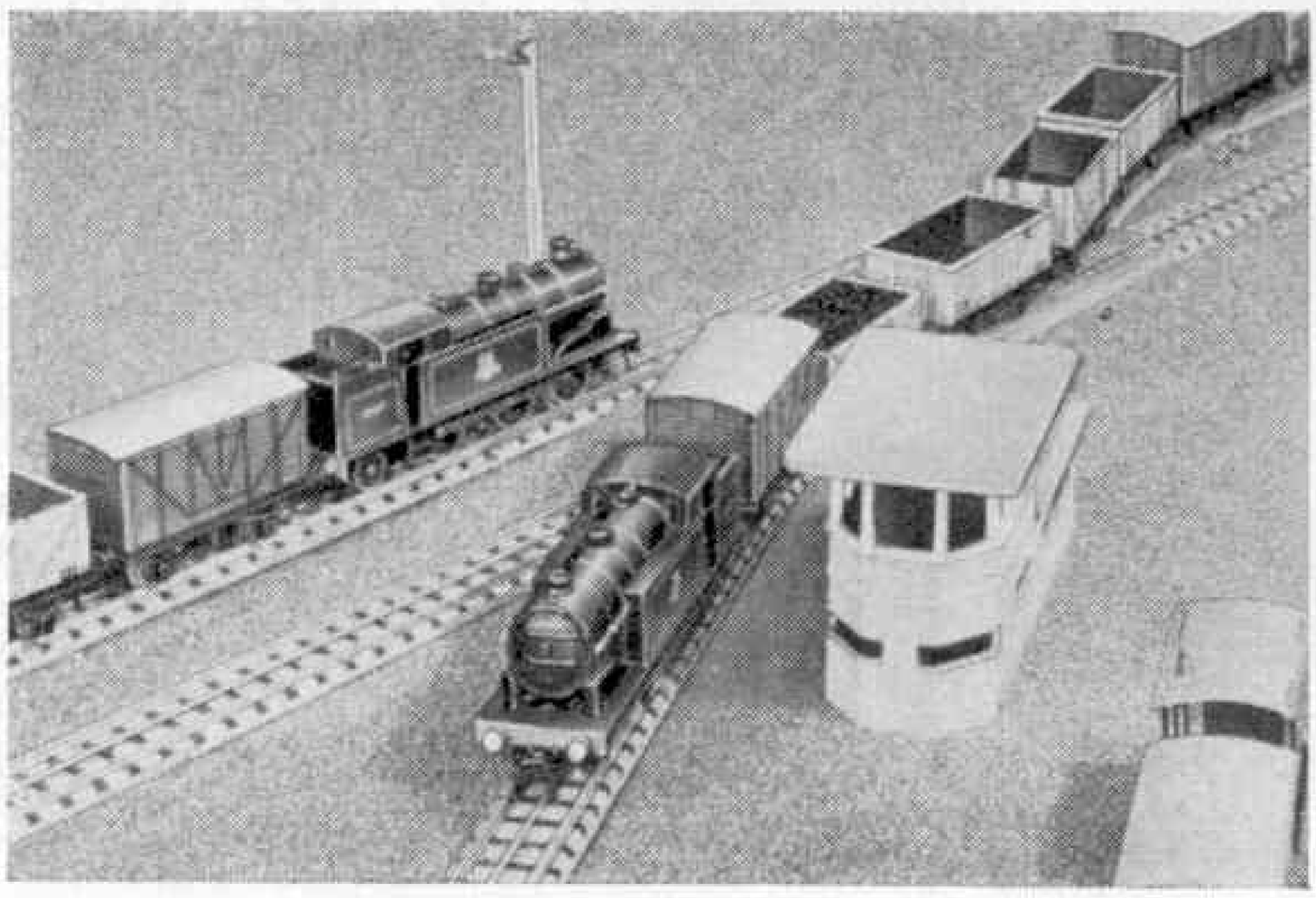
IN this article—and in another one next month—we are carrying out a long-standing promise to say something about Signals, those necessities of Hornby-Dublo Railways. To begin with, let us look in the pictures on this page at the simplest uses of the ordinary single-arm Signals.

The Signals of the Hornby-Dublo System are of what is known as the upper-quadrant type, because their semaphores move upward from the normal horizontal position to denote "line clear." In our top picture a goods train is approaching what is known as a distant signal with its yellow, fish-tailed semaphore in the horizontal or "caution" position. In this position the signal warns the driver of the train that the next one, a home or stop signal, is in the "danger" position. The train must therefore reduce speed and be ready to stop at the next signal.

This is just what has happened by the time we reach the second picture. The train is standing by the home signal, which it will be seen protects a junction. Here it must wait until the road is clear. In the last picture the train is still standing, and the reason for the hold-up is now clear. Another goods train was approaching the junction, and had already been signalled across to the branch line diverging past the Signal Cabin. Once this train is clear of the Points, the Signals controlling its movement can be restored to normal and the Points reversed. Then, the home signal at which our goods train is waiting can be cleared—and off we go again.



Well, we've stopped. What train are we waiting for?

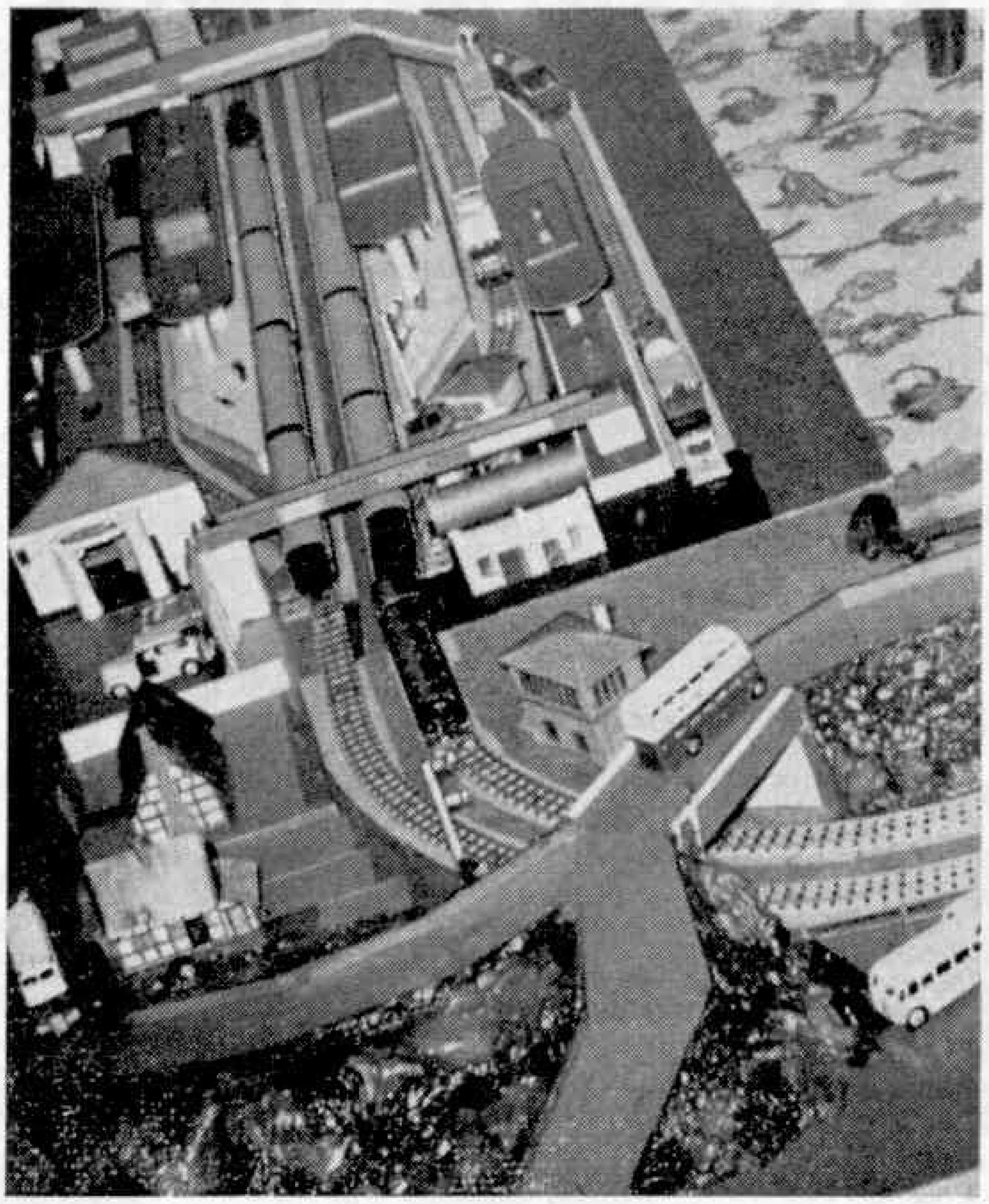


When that train of empties has crossed our track we will be able to go on again.

A Hornby-Dublo Layout in Sections

THE miniature railway system of which part is shown in the illustration here can be considered as an extension of the idea described in *The Railway on the Carpet* in the *M.M.* last August. In that article the author visualised the addition of further self-contained sections to the first permanent one already incorporated in the running track. Similarly, our picture shows a completed section of another layout that is ultimately to consist of eight matching pieces. How realistic the final layout is likely to be can be judged by the effect of the first section to be finished. The builders of the line, Mr. R. Kirkham and Mr. J. W. Thompson, both of them railwaymen, are to be congratulated on the success of their efforts.

The assembled layout when completed will require an area approximately 18 ft. long by 9 ft. wide. Each section is to be mounted on a timber base, the various sections being made to bolt together, and to be supported on trestles.



Part of a Hornby-Dublo layout that is being built up section by section by R. Kirkham and J. W. Thompson. Photograph by H. Woodman, Bradmore, Wolverhampton.

That part of the railway shown here includes a double track main line, with loop lines taken off each of the main tracks in order to serve the platforms of a four-road station. Stations and buildings have for the most part been built by the owners of the line to suit their particular requirements. In addition to passenger accommodation, provision is being made for goods traffic, and although there are sidings already available a more complete goods yard is being arranged.

Each section no doubt will bring its own problems, but you can be sure that a satisfactory solution will be found to all of these, if the work already done is any guide. Not only have railway buildings been provided where necessary, but a complete set of lineside houses and other structures also has been constructed. Bridges and roads make it possible for the miniature population to reach or cross the railway, and of course there are Dinky Toys for lineside road traffic.

Particular attention is being paid to the power and control arrangements. There are three Transformers and three Controllers, forming what is described by the builders as an operating room. Points and Signals are arranged for electrical operation from the usual "lever frame," made up from the appropriate Switches. To work the trains there are Duchess 4–6–2 express Locomotives, and several of the well known Hornby-Dublo 0–6–2 Tanks. A complete range of passenger and goods rolling stock is provided for the various services. It is intended that trains shall be run to a timetable.

It is perhaps not usual to build up a miniature railway in this way. As a rule the basic layout is put down and gradually developed, but quite obviously the joint owners of this system have made their plans well and know how they mean to carry them out.

BARGAIN PICTORIAL APPROVALS!

We send large selections (including sets) of picked modern and new pictorials from 1d.–6d. each, post free one way, with a generous discount allowed off all purchases. Br. Colonial, or B.C. and Foreign Mixed available. "Wants" lists of single stamps (NOT COUNTRIES) welcomed. We give prompt personal attention and never send again unless you ask. WRITE TODAY TO—

THE BIRKDALE STAMP CO.
104 Liverpool Rd., Southport, Lancs.

Postal Business Only
(NO CALLERS)

FREE

Another Fine New Issue Packet

Including the fine **Railroad Commemorative** from Chile illustrated, also new **San Marino Sport, Mozambique Map** and other **new Queen Elizabeth** issues. Just send 2½d. for postage and ask to see our famous "½d. UPWARDS" approvals. Write to-day to:—
CAPTAIN M. CAMPBELL & CO. (Dept. MM), 58 High Street, Watford, Herts.

FREE 100

STAMPS ALL DIFFERENT INCLUDING GIANT MINT TRIANGULARS and many other fine stamps. Request discount approvals enclosing 4d. for postage, etc. (Without approvals 1/3).

A. HUGHES, 34 LOCHALINE STREET, LONDON W.6

FREE—NORTH BORNEO 15c. K.G. VI

This scarce used stamp will be given free to all genuine applicants for our famous ONE PENNY APPROVAL BOOKLETS of BRIT. COLONIALS. These Booklets abound with PICTORIALS, PEACE, CORONATIONS, SILVER WEDDINGS and U.P.U. as well as the latest Q.E. II stamps. Best value in the world. N.B.—Enclose 2½d. stamp for Postage.

FENLEY'S APPROVALS, 81 Redbreast Rd., Bournemouth

"1954 COATS OF ARMS SET" FREE!!!

A VERY COLOURFUL SET OF THIS ISSUE IS OFFERED ABSOLUTELY FREE TO EVERYONE ASKING FOR OUR APPROVALS. WRITE TO-DAY, STATING AGE **AND ENCLOSING 2½d. STAMP TO:—**

THE DAVMAR STAMP CO. (Dept. M.M.)
88 MARGARET ROAD, EAST BARNET, HERTS.

FREE - 15 Fine Used Elizabeths - FREE

Including Coronations Free to all applicants who send 2½d. for postage and ask to see a selection of my approval sheets. No stamps sent abroad.

JOS. H. GAZE, 10 PIMLICO ROAD, CLITHEROE, LANCS.

GREAT BRITAIN

1858 PENNY REDS. Plate Numbers 71 - 224. **100** different **17/6. 50** different **7/6.** Sample **25** for **3/-.**

HILLIER — 35A NORTHDOWN AVENUE — MARGATE

LOOK! 25 LARGE PICTORIAL STAMPS FREE

Just request our pictorial approvals. Postage 2½d.

MARTIN'S STAMP CIRCLE (M.M.)
24 Catherine St., SHEFFIELD 3. *Shop:* **346 Abbeydale Rd.**

FREE TO ALL COLLECTORS

4 NEW QUEEN STAMPS including GRENADA

Send 2½d. postage.

BARGAIN 50 CHINA - - 1/3

C.O.D. extra.

25 MONACO 1/6	50 SPAIN - 1/-
50 JAPAN - 1/3	50 RUSSIA - 2/3
25 EGYPT - 1/3	25 PERSIA - 1/6
100 B. Cols. 2/-	100 F. Cols. 3/-
200 B. Cols. 4/6	25 Vatican - 3/-
500 All diff. 5/6	1000 All diff. 10/-

G. P. KEEF — WILLINGDON — EASTBOURNE

FREE! DOMINICA Q.E.II

The British Colony of Dominica has just issued a new set with the **Portrait of Queen Elizabeth.** All collectors asking to see my **6d. in 1/– Discount Approvals** will receive a short set of these stamps also a **Royal Visit Stamp** and **Coronation Stamp** absolutely free.

M. THEOBALD (MM44)
6 DELL CORNER, WEST DRAYTON, MIDDLESEX

59 DIFFERENT STAMPS

will be sent **ABSOLUTELY FREE** to all genuine collectors who enclose 2½d. stamp and request our approvals. **DEPT. M.**

BROADWAY APPROVALS, 12 CHEAPSIDE, LONDON E.C.2

FINE PKT. OF 9 Q.E. ISSUES FREE! AS ILLUSTRATED

To collectors asking to see our famous **'Quality'** approvals. Send 3d. (Abroad 6d.) for our postage and Illus. List. **IF** you wish you may join **"THE CODE STAMP CLUB,"** Year's Sub. 1/–. You receive Badge, Membership Card listing fine Gifts. Approvals Monthly. We **aim** to satisfy you. (Special Monthly approval service for Adults and Juniors). Please state if adult. (Post. Sec. Est. 1897).

WRIGHT'S STAMP SHOP (M.61)
29 PALACE STREET, CANTERBURY, KENT

For other Stamp Advertisements see also pages 556 and xx

Stamp Collectors' Corner

By F. E. Metcalfe

THE RHODESIA

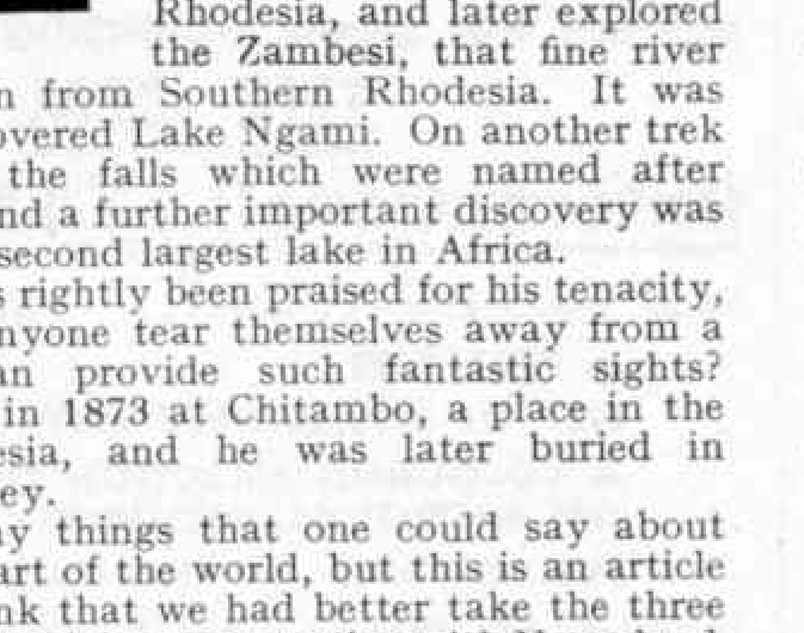
A MONTH or two ago collectors of British Colonial stamps suffered quite a blow, for three of the more popular philatelic countries ceased to issue stamps, and instead we got one set, which by no stretch of imagination is anything like as handsome as two of the three sets replaced. The three countries concerned were Nyasaland and Northern and Southern Rhodesia. Now the trio have assumed the title of Rhodesia-Nyasaland.

It is impossible to write about this part of the world without dragging in the name of Cecil Rhodes. It has been said repeatedly that he would have been pleased with the merger. That may be true enough, but his pleasure would have been tempered by the knowledge that his dream of an all-British route from Cape to Cairo has gone for ever.

Another name that comes to one's mind in connection with this African territory is that of Livingstone, the Lanarkshire doctor who went to Africa as a missionary as long ago as 1841. A few years afterwards he went to Rhodesia, and later explored the Zambesi, that fine river dividing Northern from Southern Rhodesia. It was then that he discovered Lake Ngami. On another trek he came across the falls which were named after Queen Victoria, and a further important discovery was Lake Nyasa, the second largest lake in Africa.

Livingstone has rightly been praised for his tenacity, but how could anyone tear themselves away from a country that can provide such fantastic sights? Livingstone died in 1873 at Chitambo, a place in the North of Rhodesia, and he was later buried in Westminster Abbey.

There are many things that one could say about this interesting part of the world, but this is an article on stamps. I think that we had better take the three territories, now joined, in turn, starting with Nyasaland, which was formerly named British Central Africa. This accounts for the letters B.C.A. that appeared on its first stamps, in 1891. The stamps were those used in Rhodesia, and about these I will have a word later on, for a word of warning is needed in connection with these issues.



These overprinted stamps were replaced by a definite issue in 1895. There was no watermark on the first lot, but a year later there was another issue similar, except that the stamps were watermarked.

Incidentally stamps up to the face value of £25 have been listed, and this latter is catalogued by Gibbons at £175. But as is the case with most of these high priced stamps, their actual value is nothing like as high as the catalogue would leave one to believe. This is a point that should be borne in mind. One often hears young collectors saying that they have a stamp worth so much. It is only later perhaps that they learn, if they ever do, what little connection some catalogue prices have with actual values.

In 1903 new stamps were issued, with the head of King Edward VII and now with the title British Central Africa Protectorate. In 1907 the name of the country was changed to Nyasaland Protectorate, but until 1934 only the heads, first of King Edward VII, and later, in 1913, of King George V, appeared on the stamps. In 1934 we got the set with that popular Leopard on a Rock design, which is the symbol of the Protectorate. As late as 1945 we got the KGVI pictorial set. In 1953, the portrait of King George VI was changed for that of Queen Elizabeth, and it is this set that was recently replaced.

I must not overlook the commemorative set of 1951, issued to commemorate the Diamond Jubilee of the Territory. Alas, already this set costs about 13/– or so, but those who can afford to buy it are in for something nice later on. But above all, be sure to get the definite set of 1953, up to 1/–, for that is going to be very good indeed. Fortunately a lot of *M.M.* readers will have it already. Don't part with it.

Now we come to the Rhodesias, Northern and Southern. The first Rhodesian set appeared in 1890, and the country's description was given as British South Africa. Here let me give the word of warning I promised. Rhodesian stamps up to those issued in 1910, bearing the portraits of King George V and Queen Mary, are better left alone by all but the expert philatelist, for the stamps were also used for revenue purposes, and many of these have been cleaned and faked up. To the specialist they may be of interest, but not to ordinary collectors. The 1910 set with the royal portraits, and later 1913 stamps, with the portrait of the king only, are a paradise for the philatelist, with shades, new colours, various dies, etc. All that these experts delight in, but again perhaps they are a bit above our heads.

In 1924, Southern Rhodesia brought out its own specially designated stamps, and a year later we got the first issue for Northern Rhodesia. As far as the southern territory is concerned, we still get plenty of varieties, but I think that these are more within the scope of the average collector, while those of the North will worry no one, for they are straightforward enough.

The set of 1925 for the North bore the head of King George V, and in 1938 the same design was used, with a new portrait of King George VI. A further change of portrait, this time of Queen Elizabeth, was made as late as 1953, and this is the set that went "off" at the end of June 1954. There was quite a scramble at the last minute, and again I would urge collectors to be sure to keep their sets. The 1/– value is particularly good.

Southern Rhodesia more or less followed the same course as the North, and had also one or two commemorative sets with

(*Continued on page 558*)

10 PHILIPPINES FREE

ABSOLUTELY FREE. To all who ask to see a selection of Windsor Stamps On Approval, we will send **Absolutely Free** this thrilling packet of **10 different stamps from the PHILIPPINES,** the famous group of islands in the China Sea. They will add value and interest to your very own collection, and be the envy of your friends. Write Now. Just ask for **10 Philippines Free** and they will be sent you with a selection of Windsor Stamps On Approval. Enclose 2½d. stamp for posting to you.

WINDSOR STAMP CO. (Dept. M), UCKFIELD, SUSSEX

1,000 STAMPS 7/6

ALL DIFFERENT. NO GREAT BRITAIN

500, 3/6. 250, 1/9. 100, 10d.

Br. Empire: 100. **1/6**; 200, **3/6**; 300, **7/3**; 500, **15/6**; 1000, **45/–**. Triangulars: 10, **1/6**; 25, **4/6**; 50, **10/–**; 100, **30/–**; Rly. Engines: 15, **1/6**; 25, **2/6**; 50, **5/6**. Maps: 10, **1/6**; 25, **2/9**. Ships: 10, **1/3**; 25, **2/6**. Postage 2½d. extra. All current British Colonial mint stamps in stock, including Coronation stamps and all new Elizabethan issues. Lists on request.

S. TATLOW & SONS, ECKINGTON, SHEFFIELD

FREE

FLYING SQUAD Stamp Album with stiff cover and spaces for postage stamps of the WORLD. Holds over a thousand stamps, fully illustrated on each page. Indexed and with much useful information and containing 64 pages. A most useful addition to your hobby. Send today for this unique book and enclose 6d. for postage and packing, requesting approvals.

LISBURN & TOWNSEND LTD. (MM)
West Kirby, Wirral

FREE—STAMPS CATALOGUED 5/-

to applicants for ½d. approvals.

COX, 17 STONELEIGH PARK ROAD, EWELL

MYSTERY EXCHANGE PACKETS!

Exchange your "twicers" FREE from our guaranteed unsorted Free Exchange Packets which have circulated the World over. Different, profitable and interesting without payment. Details with 5 different GOLD COAST also FREE with APPROVALS. ENCLOSE POSTAGE. Dealers supplied. Overseas Agents Wanted.

ASTLEY & CO. (M)

103 CADMAN CRESCENT, WOLVERHAMPTON

8 BRAND NEW Q.E. STAMPS FREE!

TO APPLICANTS FOR MY FAMOUS DISCOUNT APPROVALS, ENCLOSING 2½d. POSTAGE.

H. BANKS, 62 AVONLEA ROAD, SALE, MANCHESTER

MAMMOTH MYSTERY PACKET FREE, containing Triangular, Coronation, Flower Stamp, Geo. VI Pictorials, etc., etc. (FUN SORTING). Write now, requesting discount approvals. Postage appreciated. Only genuine applicants need apply.

RINTON STAMP CO.

14 SUNNINGDALE DRIVE, BOSTON, LINCOLNSHIRE

TERRIFIC FREE OFFER 15 Dazzling Hungary Pictorials, Cat. 8/-. 7 Brilliant FRENCH COLONIAL Pictorials. Immaculate Costa Rica Animal set. Request Approvals, beautifully mounted in loose-leaf approval books. Postage please.

G. Gwilym, School House, Hawthorn, Pontypridd, Glam.

A GRAND BADGE

AND BEAUTIFUL FREE SET EVERY MONTH FOR SIX MONTHS TO ALL SENDING 1/- P.O. TO JOIN OUR STAMP CLUB AND SEE OUR FAMOUS APPROVALS.

GLOBE STAMPS, 7 NORTHGATE, BECCLES

GRAND FREE OFFER

During November all genuine applicants for approvals will receive free, the 3 fine Pictorial Stamps issued by TOKELAU ISLANDS as well as CEYLON Royal Visit, 2 Orchid stamps and the recent 25c. Pictorial. Send 2½d. for postage for these 7 fine stamps.

H. B. LANG, BURNBANK, MAUCHLINE, AYRSHIRE

For good collecting join

THE GEM
(International) STAMP CLUB

Send 2½d. stamp TO-DAY. We will send you

A FREE GIFT

LIST OF OTHER FREE GIFTS

A COLOURFUL SELECTION OF STAMPS ON APPROVAL, INCLUDING "QUEENS"

FULL DETAILS OF THE CLUB

(Applications invited from S. Africa, Kenya, New Zealand and all other British Dominions and Colonies.)

Write NOW to:—

GEM STAMP CO. (Dept. MC)

514 FAIRFAX DRIVE — WESTCLIFF — ESSEX

MODERN UNSORTED LOTS ON PAPER with new issues and Pictorials. Gt. Britain with Coronation, 1 lb. (3,000) 5/-. British Empire; many new; 1 lb. (3,000) 25/-, ½ lb. 13/-, 4 oz. 6/9. 4 oz. lots (about 750) Australia/Canada 3/9, South Africa 5/6, France 5/6, World I 5/3, World II 3/6, Holland 3/6, U.S.A. 100 large 4/3. (Abrd. 1/- lb. ex.)

A. Davies (M/10), 111 Holme Lacy Road, Hereford

100 DIFFERENT STAMPS FREE

To Approval Applicants enclosing 2½d. postage.

N. JOHNSON (Dept. M.M.), 19 Hillside, Slough, Bucks.

LIBERIA SET, 3 MAGNIFICENT NEW BIRD STAMPS USED, FREE. 2½d. FOR APPROVALS PLEASE.

G. T. COOMBER, BCM/REXSTAMPS, LONDON W.C.1

SPECIAL. TO ALL APPROVAL APPLICANTS THIS MONTH **FREE. VICTORY SET MINT.** 2½d. POSTAGE.

A. CUNNINGHAM (Dept. MM), 36 DOONFOOT ROAD, AYR

For other Stamp Advertisements see also pages 554 and xx

Stamp Gossip

THE NEW SEASON

FOR the many collectors of K.G. VI–Q.E. II stamps, the past summer has been anything but an off period. With new Queen Elizabeth stamps, and new printings of King George VI issues coming out all the time, those who did park their albums are likely to find that they have missed many things.

For instance, on 1st July, three sets, as mentioned at the time (Northern Rhodesia, Nyasaland and Southern Rhodesia) went obsolete. Then there was the Kenya £1 stamp, which appeared in January in a new perforation. This stamp became obsolete on 1st June and there is little chance now of getting one at current rates.

INDIA'S CENTENARY

India is all set for a grand time, celebrating the centenary of its first postage stamp, and Mr. Kooka has again kindly sent a cutting of the *Times of India*, which gives full details of these doings. The part that will most interest the average British collector, who of course will not be able to attend, is that four commemorative stamps are to be issued. The designs will depict various modes of mail transport, and bear the dates 1854–1954.

The stamps of India have always been popular with collectors all over the world, and many of them will be at the exhibition at New Delhi in spirit, if not in the flesh. Incidentally, better fill up those blanks of the current definitive set," for in the newspaper cutting supplied by Mr. Kooka details were given of an entirely new set to replace it. This will be issued on 26th January of next year. Good Luck, India, with your exhibition! We hope you will like the stamps that Queen Elizabeth is sending for display.

A CLUSTER OF GRAPES

I have previously mentioned what interesting designs are to be found on Israel stamps, and an example of one of these is being illustrated this month. It is of a stamp issued in September to commemorate the Jewish New Year 5715. The designer of the stamp was Mr. G. Hamori, Tel Aviv, and the theme of the design is taken from the book of Numbers, chapter 13, verse 23. *And they came unto the brook of Eshcol, and cut down from thence a branch with one cluster of grapes, and they bare it between two upon a staff.*

Stamps of this kind are of interest to non-collectors. No wonder the issues of Israel are growing so popular.

AMERICAN COMMEMORATIVES

A small album of 20 pages, with a thin card binding, has been published at 1/6 to hold the various 3c. commemorative stamps of the U.S.A. Now these stamps, of such diverse designs—alas not all of them are out of the top drawer as works of art—are easy to obtain, and on the whole so interesting, that they are very popular with collectors, particularly juniors. But they look at their best when they are mounted on nice plain sheets, with details as to why they were issued written or nicely printed underneath. Still for the youngsters, these bijou booklets—one can hardly call them albums—have their uses. The one referred to above illustrates the stamps in each square where they are to be stuck, so even the youngest of collectors will have no difficulty in finding the right places.

One of these latest 3c. commemoratives, not in the book, has an interesting design picturing a sower. It commemorates the Nebraska Territorial Centennial, as can be seen from the inscription.

PUFFING BILLY

It is not often that we get a chance to illustrate a new stamp from that grand country Norway. To commemorate the centenary of Norwegian Railways, Norge issued a modest, but albeit attractive set of three stamps; the top value of 55 ore is the one shown here. The 20 ore depicts the first real puffing billy of Norway and a horse drawn sledge, while the 30 ore shows something very different—a diesel express train.

Quite a lot of correspondence passes between Norway and Great Britain, and thus many genuinely used copies of stamps from that former country are to be picked up cheaply. Collectors could do much worse than take up modern Norwegian stamps, used, if they have not a great deal of cash to spend on their hobby; this will not restrict their enjoyment, if they collect intelligently. Go to a dealer who goes in for straight modern foreign in general, and he should produce plenty of Norway for you, but don't forget—nice copies!

THE CATALOGUES

British collectors are well catered for in the way of stamp catalogues, and these are being used quite a lot abroad in these days. For the young general collector—I am afraid that their numbers are decreasing—Gibbons publish their *Simplified*, a really wonderful piece of work in its particular field, and becoming every day more popular as thematic collecting grows.

Then for the growing group of collectors who take K.G. VI and Q.E. II stamps we have Gibbons' *Two Reigns* Catalogue and the Commonwealth Catalogue. You take your pick of these according to your taste, both are widely used. Finally we have the general catalogue of that old Ipswich firm, Whitfield King and Co., excellent for the general or thematic collector.

Fireworks that Save Lives—(*Cont. from page 515*)

ships. He pointed out that his apparatus—a trough-fired rocket with 300 yards of half-inch line—weighed only 40 lb., could be operated by one man, and was very accurate, but it took him 30 years to convince the Government and shipowners that it had great practical value in life-saving.

Meanwhile he worked as a dock policeman, fireman, rigger, and chainmaker, to pay for experiments that would improve his invention. The Royal Mail Line adopted it in 1912, but few others were interested. Schermuly lived to see his apparatus given official recognition, however, and 19 days before he died, in 1929, the carrying of line-throwing equipment by British ships became a Board of Trade requirement.

World War II saw the introduction of several new ideas for using fireworks in saving lives. A Schermuly pistol rocket device was invented to throw 1,200 ft. of steel cable from airfields and ships, to damage enemy aircraft. Automatic line-throwing rockets were made for Air-Sea Rescue operations, these being used to drag life-boats to dinghies, when airmen had been shot down over the sea.

Since the end of the war, completely new ranges of distress signals have been designed. These embody a sealed-in mechanical ignition device, replacing the friction match ignition formerly in general use. They represent the latest advance in pyrotechnic distress signalling, and have been widely adopted by shipping lines both in Britain and abroad.

Stamp Collectors' Corner—(*Continued from page 555*)

which I have no room to deal. There were plenty of perforation varieties in the stamps which were in use until 1937, and then we got a nice little set with the head of King George VI, which most collectors would obtain, for there were plenty of them about, used being very cheap. A handsome definite set was released in 1950. Now this is obsolete. The commemorative set of 1953 looks like being a good one, and the Commonwealth Catalogue gives the numbers sold, which is a good test of ultimate value.

A final word about the handsome stamp issued for the Coronation of Queen Elizabeth. This is selling at about 7/– a copy. Don't be in a hurry to pay that figure. There are quite a few tucked away, which will have to come out one day.

New Meccano Models—(*Continued from page 541*)

connecting two 12½" Strips at their ends by 2½" × 2½" Flexible Plates. The Plates are then edged by 2½" Strips. Join the sides together at one end by a 5½" × 2½" Flanged Plate and at the other end by a 2½" × 1½" Flanged Plate held by a bolt 1 on each side.

Two 5½" × 2½" Flexible Plates form the top of the table. Each Plate should be strengthened by bolting underneath it two 5½" Strips, and a 2½" Strip along the outer edge. The 5½" × 2½" Flexible Plates should then be connected to the sides of the bed by four Angle Brackets each arranged as shown in Fig. 3 on page 541.

The planing tool is made by bolting four 2½" × ½" Double Angle Strips between a Bush Wheel 2 and a Wheel Disc 3. The tool is fixed on a 4" Rod supported at each end in a 2½" Strip attached to the side of the machine bed. One of these Strips is indicated at 4, and is fitted with two ⅜" Bolts held in place by nuts. Fix each to the side of the bed by two nuts, so that the Strip 4 is spaced from the side by the length of the Bolts. Connect the other 2½" Strip to the side by two Double Brackets, one of which you can see marked 5 in Fig. 3. Fix a 1" Pulley on the 4" Rod and use a Spring Clip to keep the Rod in position in its bearings.

A *Magic* Motor is used to drive the planing tool. Bolt the Motor to the machine bed on the same side as the 1" Pulley on the 4" Rod and connect it to the Pulley by a Driving Band.

The rollers 6 are three 1" Pulleys each fitted with a Motor Tyre and fixed on a 3½" Rod. This Rod is supported in two 2½" Stepped Curved Strips, which are joined together by a 2½" × ½" Double Angle Strip. The Stepped Curved Strips are lock-nutted to Flat Trunnions bolted to the sides of the machine bed.

You will require the following parts to build the Planing Machine: 4 of No. 1; 4 of No. 2; 8 of No. 5; 2 of No. 11; 8 of No. 12; 1 of No. 15b; 1 of No. 16; 4 of No. 22; 1 of No. 24; 1 of No. 24a; 56 of No. 37a; 46 of No. 37b; 5 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 90a; 4 of No. 111c; 2 of No. 126a; 3 of No. 142c; 4 of No. 190; 2 of No. 192; 1 *Magic* Clockwork Motor.

Master Stuart Cook, of Odiham, Hants., in the striking Meccano fancy dress with which he won a prize at an Odiham fete last summer.

THE "ANORMA" HANDBOOK

We have received a copy of the 2nd edition of the "Anorma" catalogue, a handbook published by Minikscale Limited, 1 Clifton Street, Liverpool 19. In addition to including in catalogue form details of the well known "Anorma" construction kits, for model buildings for 00 Gauge railways, the book includes two interesting and fully illustrated contributions on scene setting and low-relief modelling by P. R. Wickham, who is an acknowledged authority in such matters.

Outfits for low-relief construction in 00 Gauge and in 0 Gauge also are available. These products look most convincing and must be of interest to the modeller who wishes to provide a realistic setting for his miniature railway. Building papers, paints and other materials useful in miniature linside work are listed.

Copies of the handbook can be obtained from Minikscale Ltd., Clifton Street, Liverpool 19, price 1/8, including postage.

Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Motor Vehicle Figureword

Simple arithmetic and motor vehicles provide an interesting Figureword contest this month. It is concerned with the names of current types of British motor cars and lorries.

There are ten words in all, each of seven letters, and in the diagram on this page there are ten horizontal rows, one for each of these words, which readers are asked to find with the aid of the clues given here.

Each letter of the alphabet has been given a numerical value, A being 1, B 2, C 3, and so on to Z which is 26. Thus the numbers in each row represent the letters of the name of the motor car or lorry concerned, and add up to the horizontal total given. The letters in the ten rows must also be such that the vertical totals are those shown in the diagram. For example, the first word begins with B, the value of which is 2, and this number forms part of the horizontal total of 95 and the vertical total of 79.

							HORIZONTAL TOTALS
B							95
							54
							80
							69
							91
							62
							54
							105
							73
							83
79	78	125	140	128	98	118	
VERTICAL TOTALS							

There will be two sections in this Contest, for Home and Overseas readers respectively, and in each prizes of 21/–, 15/– and 10/6 will be awarded for the three best entries in order of merit, together with a number of consolation prizes for other good efforts. In the event of a tie, originality of presentation will be taken into account. Competitors should not cut out the diagram on this page, but should write the solution on a separate sheet, and on the back of it give their name, address and age. Entries must be forwarded to *November Figureword Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 31st December 1954; Overseas, 31st March 1955.

Motor Vehicles Drawing Contest

In this competition we give readers another opportunity of showing their skill in drawing. The subject is a motor car or motor lorry of any type that is listed in the Figureword contest above. The drawing can show the vehicle from any angle, and colour can be used if desired, but it must be borne in mind that bright colours will not compensate for bad drawing, and that the judges will take the merit of the drawing itself into account when reviewing the entries and making their final decision.

There will be separate sections for Home and Overseas readers respectively, and in each section the best entries will be awarded prizes of 21/–, 15/– and 10/6 in order of merit. Other good efforts deserving of recognition will be awarded consolation prizes. Each competitor must write his name, address and age on the back of his entry, and state what motor vehicle the drawing represents. Entries must be forwarded in an envelope or wrapper addressed to *Motor Vehicle Drawing Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 31st December 1954; Overseas Section, 31st March, 1955.

Beauty Spots Photographic Contest

Readers who possess cameras and who have made good use of them while on holiday during the summer this year still have time to enter the best of their holiday "beauty spot" photographs in this special photographic contest.

Each competitor may submit only one photograph, which must have been taken by himself. On the back of the print he should state exactly what the picture represents, and remember to give his name, age and full address.

The competition will be in the usual two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate sections for Overseas readers, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Entries should be addressed *Beauty Spots Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.* The closing dates are: Home Section, 30th November, 1954; Overseas Section, 28th February, 1955.

Competitors who desire their entries to be returned should note the important paragraph at the top of this page.

Fireside Fun

A man excitedly reported to the police that he had been struck outside his house in the dark by an unknown assailant. A young policeman sent to investigate, soon returned and announced, "Solved the case."

"Fine work!" said his superior. "How did you do it?"

"I stepped on the same rake," replied the policeman, pointing to a lump on his head.

* * * *

The ambitious young actor had set out to conquer the world with *Hamlet*, but the tour soon ended and he was compelled to walk home.

"Didn't they like you?" asked a sympathetic friend.

"They didn't seem to," replied the actor sadly.

"But didn't they ask you to come before the curtain?"

"Ask me!" repeated the would-be Hamlet, with tears in his eyes. "Ask me! They dared me!"

* * * *

Bill: "What did the bald man say when he received a comb for his birthday?"

Jill: "I don't know. What?"

Bill: "Thank you very much, I'll never part with it."

"Did you call on Mr. Smith about the payment of that bill he owes?"

"Yes sir."

"Well, what did you find out?"

"Mr. Smith, sir."

* * * *

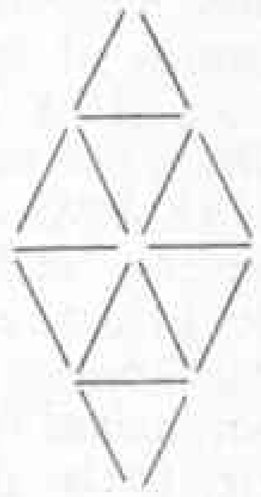
Teacher (reading sentence to class): "When Napoleon was crossing the Alps, he had his guns drawn on sledges. Now, how do we know that this is the past tense?"

Bright Boy: "Please, sir, because Napoleon's dead."

* * * *

BRAIN TEASERS

ANOTHER TRICK WITH MATCHES



Lay down 16 matches to form 10 triangles as shown in the diagram alongside. The trick lies in removing 4 matches only in such a way as to leave only 4 triangles.

* * * *

THE FROG IN THE WELL

Jimmy the frog is at the bottom of a 20 ft. deep well, and badly wants to get out. Each day he climbs up 3 ft. but during the night he slips back 2 ft. How long will it take him to reach the top?

* * * *

CAN YOU NAME THESE TOWNS?

Each of the following six phrases points to the name of a well-known town in England. Can you name the town to which each phrase refers?

1. Wise dog owners use these.
2. Neither north nor land.
3. Assembled like batchelors' buttons.
4. Something fresh and something old.
5. You could use the latter to fasten the door of the former.
6. You couldn't run a ship without this.

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

The Water Problem

To solve this problem the procedure is as follows:

1. First fill the 7 gallon can.
2. Now fill the 4 gallon can from the 7 gallon can.
3. Throw away the water in the 4 gallon can.
4. Now empty the 3 gallons in the 7 gallon can into the 4 gallon can.
5. Refill the 7 gallon can from the pool.
6. From the 7 gallon can pour sufficient water (*i.e.*, 1 gallon) into the 4 gallon can to fill it, thus leaving exactly 6 gallons in the 7 gallon can.

* * * *

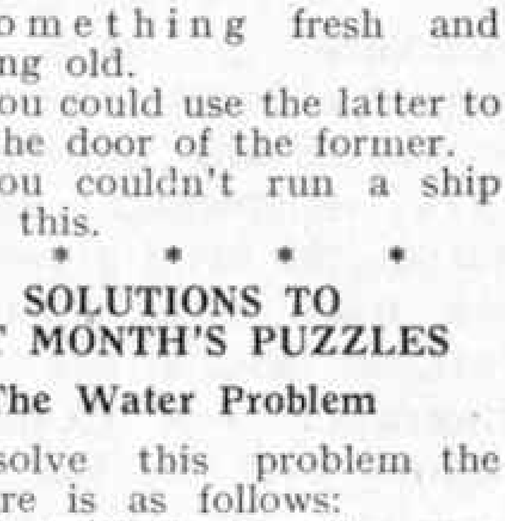
A Case of Identity

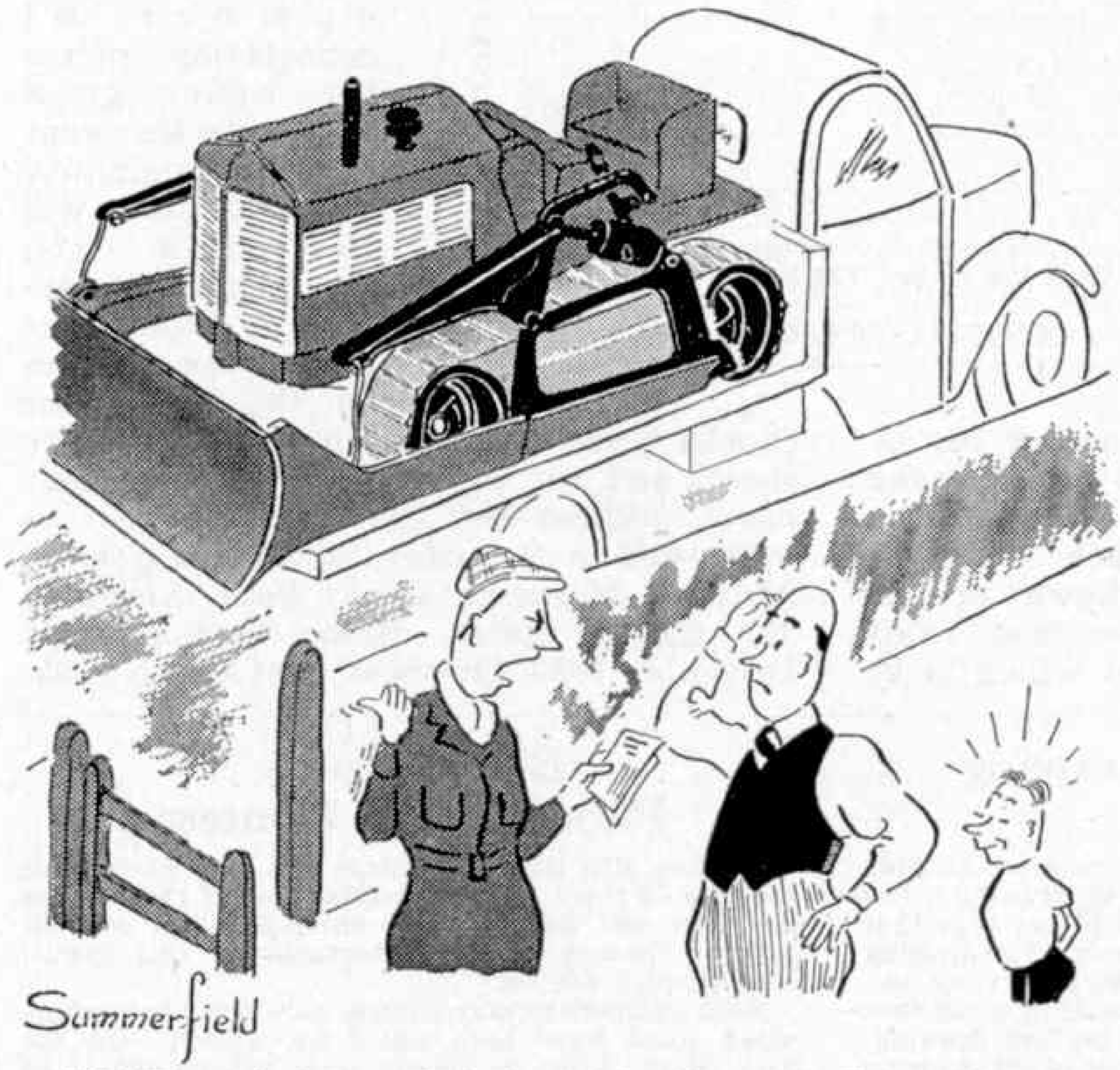
The 11 letter word that can be identified by the 3 clues given in the October *M.M.* is "*Partnership*".

* * * *

The Farmer and His Field

The manner in which the four sons divided their father's field is shown in the sketch alongside.





"All I know is that somebody from this address ordered a Bulldozer!"

* * * *

Murphy: "What's that in your pocket?"

Mike: "Shhhh! It's dynamite caps. I'm waiting for Pat. Every time he comes by he slaps me on the chest and breaks my pipe. Next time he'll blow his hand off."

* * * *

Smith and Jones each started digging a hole at the same time. Three hours later the foreman came along.

Foreman: "Look here, Smith, you and Jones started digging at the same time. Now he has a pile of dirt there twice as big as yours."

Smith: "Well, sir, that's because he's digging a bigger hole."

Have a go at GENERAL KNOWLEDGE!

1 Why do they call it India Rubber?
Is it because it (a) comes mainly from India, (b) was discovered by an Indian or (c) Columbus discovered it in Central America which he thought was India?

2 How much cord is there in the 'backbone' of an ordinary Dunlop car tyre?
Is it (a) nearly 10 yds, (b) nearly 2 miles or (c) nearly 500 yds.?

3 What is the World's Land Speed Record that was set up on Dunlop tyres in 1947?
(a) 257 mph. (b) 394 mph. or (c) 427 mph.?

4 When did the first British jet aircraft take off? In 1919, 1937 or 1941?

5 Who won the World's Professional Sprint Cycling Championship three times running —(a) Sid Patterson, (b) Reg Harris or (c) Ken Joy?

The **DUNLOP** *Cadet gives you the answers!*

(1) c. (2) b. (3) 394 mph by the late John Cobb in his Napier Railton. (4) 1941—on Dunlop tyres. (5) b. Scoring: 10 marks for every correct answer. 50—top of the class. 30-40—Good. Below 30—Smarten up there!

This quiz is provided for your amusement by the Dunlop Rubber Company Limited

4H/144

Here's FUN for EVERYONE with SPEAR'S GAMES

CAPPIT

A game for 2 – 4 players, who try to "Catch and Cap" their opponents. As easy as ludo, but much more exciting. **7'9**

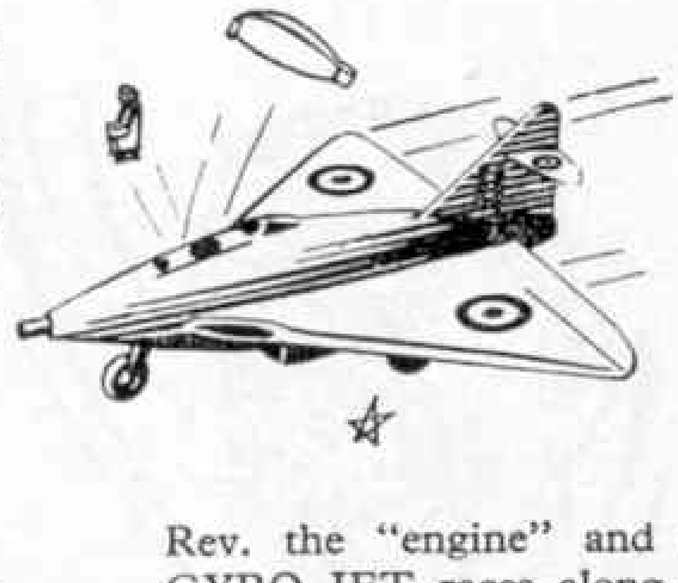
TELL ME

The queen of quiz games. Spin the wheel and roll out the questions! Endless fun for any age. Any number of players, the very thing for your party. **6'3**

Obtainable from good toyshops and departmental stores. If your dealer cannot supply, write for address of nearest stockist to:

J. W. SPEAR & SONS LTD.
DEPT. M • ENFIELD • MIDDLESEX

★ OIL PAINTING made simple by numbers. Complete with canvas, instructions, paints, brush, etc. Price 9/6. *Post and pack.* 9d.



Rev. the "engine" and the GYRO JET races along the floor, ejecting the pilot when the radar aerial hits an obstacle. Length 5½". Price 4/11. *Post and pack.* 7d.

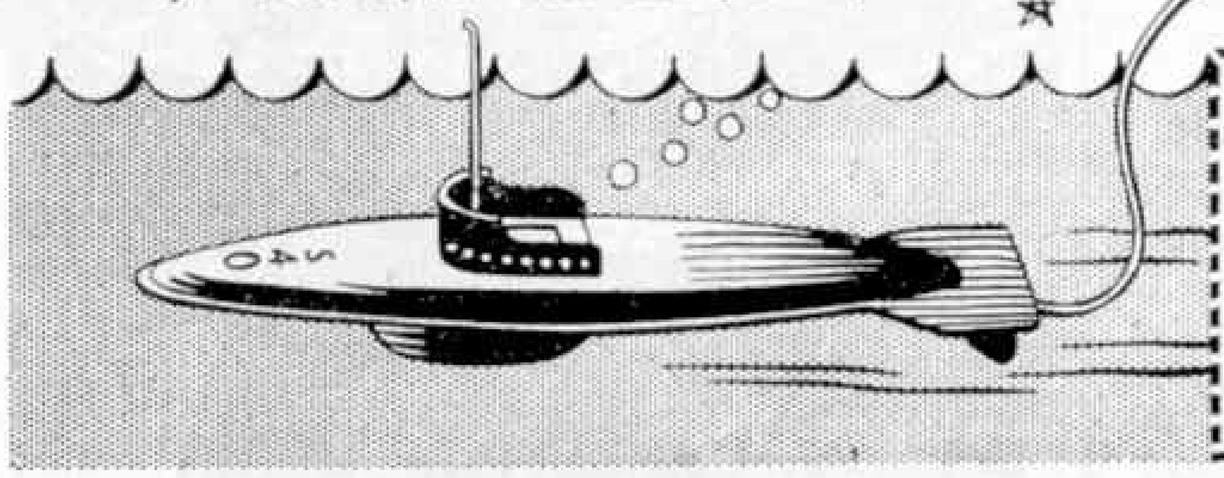
An interesting hobby for young people, MARQUETRY. Kit contains full instructions, veneers, inn signs, designs, etc. Price 7/- *Post and pack.* 7d.

★

Please write for our Christmas Catalogue.

SNORT SUBMARINE — dives, travels at speed under water and surfaces. Simple to control. Length 9" Price 6/11. *Post and pack.* 9d.

★



Hamleys
Estd. 1760
HAMLEY BROTHERS LTD
The Finest Toy Shop in the World
200-202 Regent Street, London W.1.
(ONLY ADDRESS) Tel. REGENT 3161.

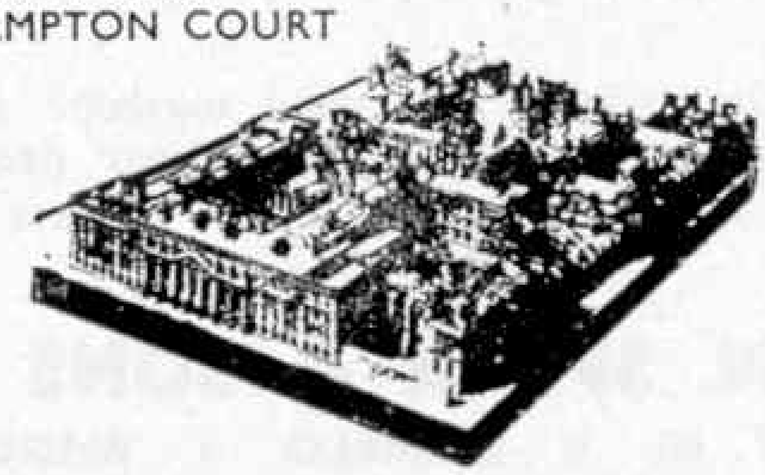
Micromodels

MODELLING IN CARDBOARD

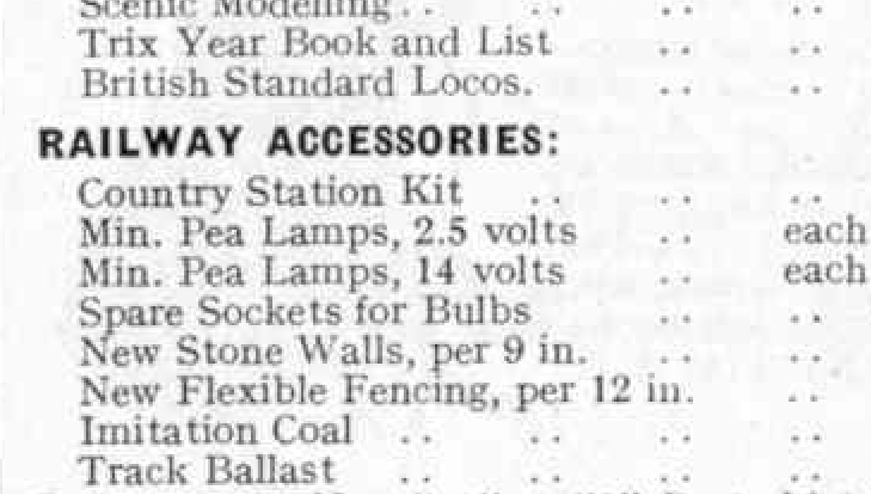
SEND stamped, addressed envelope for Illustrated literature describing the fascinating art of three-dimensional volumetric model-making in card—the absorbing creative hobby of a lifetime. Neat; your workshop and work tidies into a cigar-box. There are over 100 Historic Architectural, Mechanical, Maritime, Aero and other lovely subjects shrunk to form little gems. Some of these treasures give you 100 entrancing hours of recreation in the making.

MICROMODELS LTD.,
3 (MM) Racquet Court,
Fleet Street, E.C.4

SET, ARCXXI
HAMPTON COURT



A.D.P. CHEMICALS & APPARATUS



We can offer a large selection of equipment suitable for students & beginners, send stamp for list.

Special! Trial Package

COMPRISING APPARATUS & CHEMICALS SUITABLE FOR BEGINNERS. **PRICE 7/6.** Post & Packing 1/3.

14 (D/MM) SURREY ROAD, BARKING, ESSEX

BOOKS:

A.B.C.s, L.M.R., E.R., W.R., S.R.			2/-
Layout Plans	No. 1, 1/3	No. 2,	1/3
Scenic Modelling			1/9
Trix Year Book and List			2/6
British Standard Locos.			1/6

RAILWAY ACCESSORIES:	00	0
Country Station Kit	5/3	—
Min. Pea Lamps, 2.5 volts .. each	1/-	1/-
Min. Pea Lamps, 14 volts .. each	1/2	1/2
Spare Sockets for Bulbs	4½d.	4½d.
New Stone Walls, per 9 in.	1/2	—
New Flexible Fencing, per 12 in. ..	1/2	—
Imitation Coal	9d.	9d.
Track Ballast	1/6	1/6

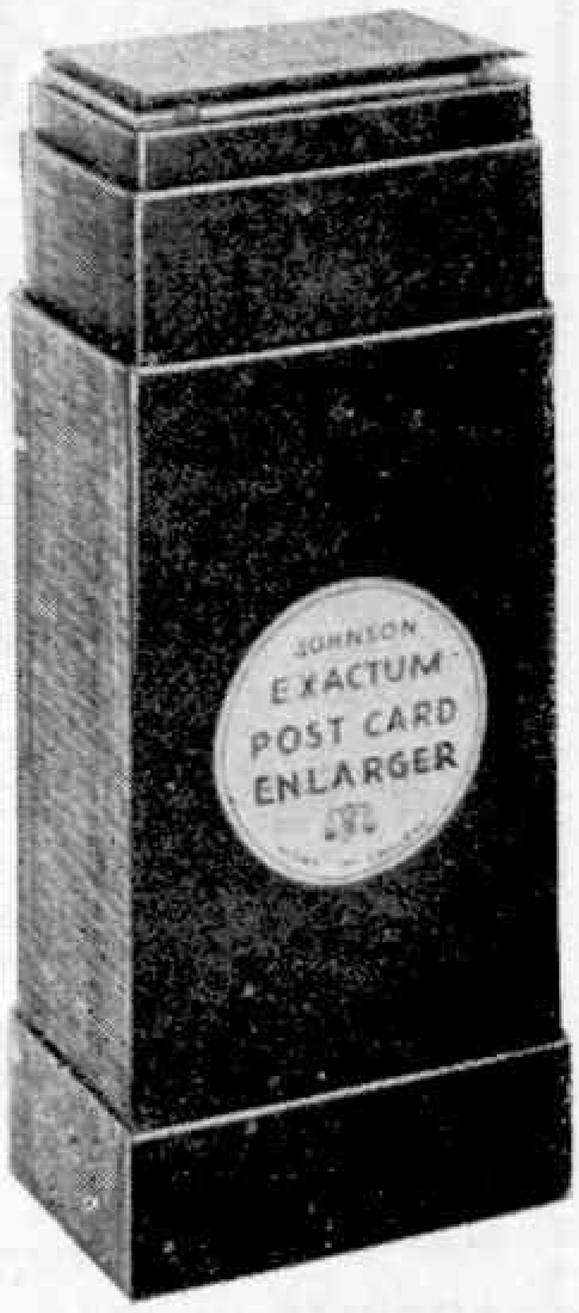
Postage extra New "00" or "0" Parts List 6d. per post.

TYLDESLEY & HOLBROOK (M.E.T.A.)
109 DEANSGATE, MANCHESTER 3

MAKE LARGER PRINTS

with the JOHNSON POSTCARD ENLARGERS

from 2¼ in. × 3¼ in. or 35 mm. negatives



Expense need no longer deter you from buying an enlarger. With the Johnson Exactum Postcard Enlarger you can make postcard-size prints from 2¼ in. × 3¼ in. (box camera size) or 35 mm. negatives. It is as simple to use as a contact printing frame. No focusing is required and there are no adjustments to make. Full instructions are enclosed with each Enlarger.

No. 1 2¼ × 3¼ in. negatives to POSTCARD.
No. 2. 35 mm. negatives to POSTCARD.

51/- each

MAKE BETTER PRINTS WITH JOHNSON UNIVERSOL DEVELOPER

Johnson Universol Developer is highly concentrated and contains Johnson '142' for preventing fog and stains, and '326' wetting agent to promote even development. Universol is excellent for developing both contact and bromide papers, producing a rich image colour with a full range of tones. Full instructions accompany every bottle.

225 c.c. (8 oz.) size..... **2/9** *each*
570 c.c. (20 oz.) size..... **4/6** *each*

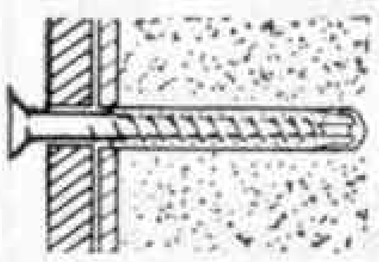
JOHNSONS OF HENDON LTD

THE WORLD-FAMOUS MANUFACTURERS OF PHOTOGRAPHIC CHEMICALS, APPARATUS AND ACCESSORIES.

LONDON N.W.4. ESTABLISHED 1743

RAWLPLUGS

for speedy screw-fixing



For simple and speedy fixing of equipment, racks, motors, etc., to brick, stone or concrete—*use Rawlplugs!* There's a Rawlplug for every size of screw, and Rawlplug easy-to-use Tools for speedy hole boring. Popular Outfit 2/6d., Household Outfit 6/-, Handyman Outfit 9/6., each complete with Rawlplugs, Screws, Hooks and 16-page booklet "Hints on Fixing."

RAWLPLUG DURIUM Registered Trade Mark TIPPED DRILLS

for fastest-ever masonry drilling

There's nothing to equal the astonishing speed of these drills in penetrating brick, stone, tiles, etc. The Durium new process carbide tip is harder than any metal or alloy, giving fifty times more life than ordinary drills. In sizes from 5/32 in. to 1 in. diameter—can be used in hand or electric drills.

B472

TRADE ENQUIRIES INVITED • THE RAWLPLUG COMPANY LIMITED. LONDON S.W.7

Kit No. 3064
THE 'REGENT'
7¼ in. long.

6/6

Grand Galleon Kits

Making models of colourful ships of history is an absorbing and worthwhile hobby—one which has existed since the men of England first sailed the seas. Hobbies market an extensive range of reasonably priced kits for models from 7 in. to 22 in. long. Each contains a large design sheet with full size patterns and complete instructions, planed wood ready to cut to shape, sail parchment and cord, etc. The two models illustrated are miniatures. Other kits are shown in Hobbies free booklet and details of all Hobbies kits and tools are contained in the 1955 Handbook. Use the form below and receive your kit by post. Also obtainable from ironmongers and stores or Hobbies Branches.

THE 'BONAVENTURE'
Kit No. 3014. 8 in. long.

5/11

To HOBBIES LTD.
Dept. 96 DEREHAM, NORFOLK

Please send me your Free 20-page Booklet and name and address of nearest stockist. Also send me the items I have marked thus X.

☐ 1955 Handbook 2/3 post free ☐ The 'Regent' Kit (3064) 6/6 post free ☐ The 'Bonaventure' Kit (3014) 5/11 post free

I enclose P.O. for.....

NAME.....

ADDRESS.....

.....

HOBBIES 1955 HANDBOOK
136 pages containing how-to-make articles, details of model, toy, fretwork and furniture designs, etc. Free design for a working model tug. Price 2/- from newagents, stockists and Hobbies branches, or 2/3 post free from Dereham.

Playcraft

OIL PAINTING BY NUMBERS

TO START YOU PAINTING!

JUNIOR ARTIST. A newly designed set with two canvases of absorbing interest to all teenagers. Price **7/11** including P. Tax.

DISNEYLAND. Including two specially prepared boards of some of the world-famous Disney characters for the smaller children. Price **12/11** including P. Tax.

COLOUR CRAFT. Specially planned and equipped; a set for the adult enthusiast. Price **14/11** including P. Tax. Oil Paints supplied by Reeves & Sons Ltd.

THE PLAYCRAFT ART BUREAU INFORMATION SERVICE
For your future enjoyment do not fail to register with the Playcraft Art Bureau. This is open to all users of Junior Artist, Disneyland and Colourcraft sets.

From all high-class Art, Hobby and Toy Shops. See your local dealer or write to:

PLAYCRAFT TOYS LIMITED
Finsbury Pavement House, 120 Moorgate, London E.C.2

CHEMISTRY APPARATUS

Send 2½d. Stamp for latest
PRICE LIST

•

BOOKLETS:
"Experiments" 10½d.
"Formulas" 10½d.
"Home Chemistry" 2/3
Post Paid

BECK (Scientific Dept. G), 60, High Street
STOKE NEWINGTON, LONDON N.16

The NEW ERG CATALOGUE

This splendid volume packed full of vital information for all who are interested in 00 railway modelling and containing many items suitable for use with Hornby-Dublo railways is now ready. **Price 1s. 6d.** (post 3d.)

SEND FOR YOUR COPY TODAY!

ERG (Bournemouth) LTD
529 Roumelia Lane, Boscombe, Bournemouth

Size
9 in. x 4 in.
wide

GAMAGES

offer the BRAND NEW

'DISTLER' ELECTROMATIC CAR

Authentic German Model of the famous 'Porsche'

✱ Runs for 50 hours with a 4½ volt flash lamp battery. ✱ Synchronised gears (Reverse, Neutral, two Forward). ✱ Climbing capacity in reverse to 36°. ✱ Sealed motor unit—No Lubrication, no Brush changing. ✱ Complete with a real ignition key.

39/6

Post and packing 1/6 outside our own van area.

Have You Had Yours?

132-Page MODEL and TRAIN BOOK

Now Double Last Year's Size

The 1955 book includes Trains and Accessories, Boats, Planes and Engines, and other models. Interesting Facts, Figures and Photos. about Railways, Airways, etc. Profusely illustrated. **1/-**

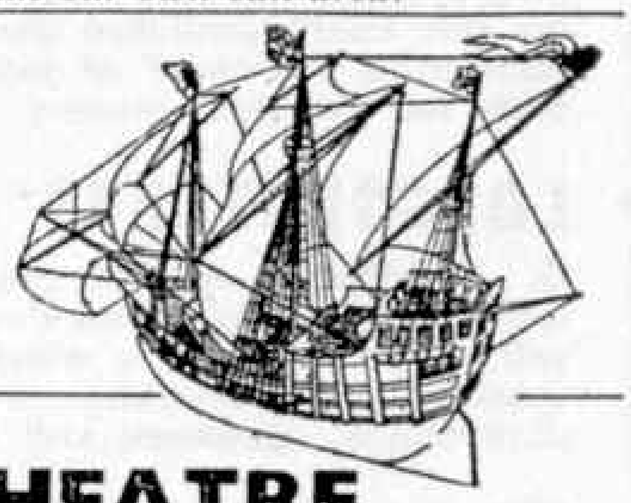
Post 3d. Mark envelope Dept. RB4.

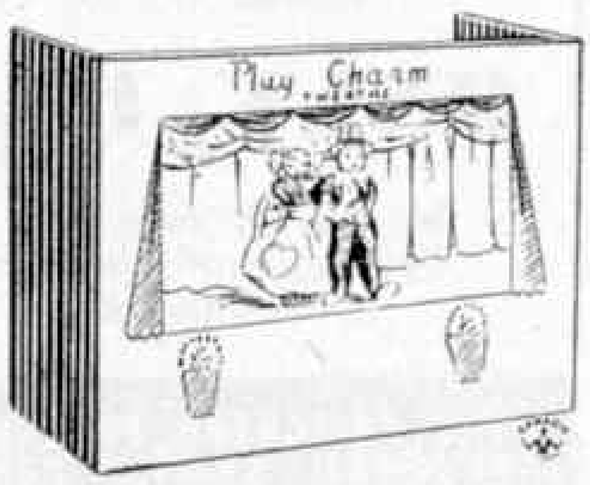
'BIRD FLIGHT'

GALLEON CONSTRUCTION KITS

Full scale plans and concise instructions enable you to build Christopher Columbus's Flagship **'SANTA MARIA'** in which he discovered America. Easy to build realistic kit. Approx. 10 in. long. **12/11**

Post and packing 1/-.





'Play Charm'

PUPPET THEATRE

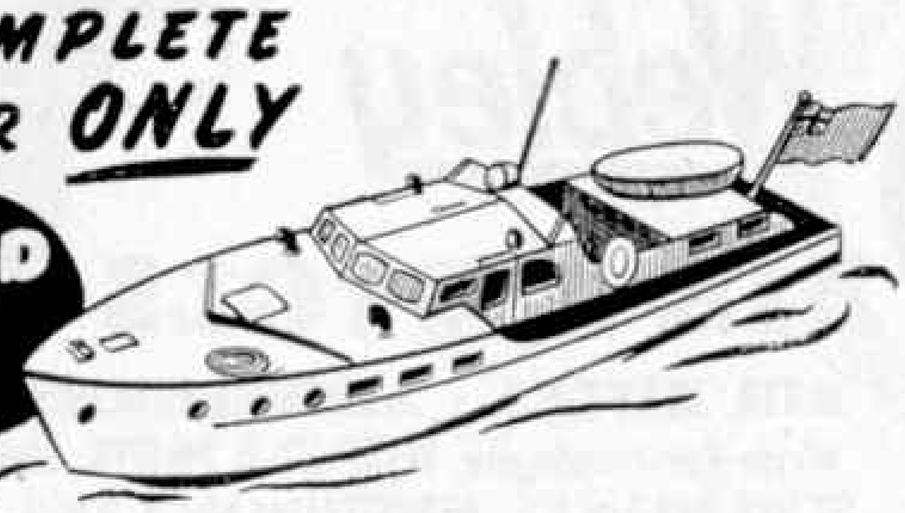
Enables you to operate the miniature puppets in a most realistic fashion. Strongly made, attractively finished, complete with front curtain, controlled automatically at the back. Two dressed figures which can be made to dance, gyrate and perform in a most convincing manner. Operated beneath the stage, in fact, the controller is out of sight. Packs flat. Size when erected 16×14×5 in. **Complete 37/6**

Post and packing 1/9.

GAMAGES, HOLBORN, LONDON E.C.1. **New 68-Page Conjuring Catalogue 1/-.** *Post 3d.*

A Power-Driven MOTOR CRUISER

COMPLETE FOR ONLY 9/-



This model builds into a realistic motor cruiser by Thorneycroft from three printed cards (in colour) supplied in wrapper with easy-to-follow instructions. A few drops of methylated spirit (unlit) are sufficient to drive the model for 30 minutes or more. This is a fascinatingly simple yet effective model to build that will give hours of pleasure. Easy to build. If ordered by post, add 2d. for postage.

SPECIAL OFFER

If two cruisers are ordered (total price including postage 1/8) a free Skylon Micromodel will also be sent.

MODELCRAFT

77 (H), Grosvenor Rd., London S.W.1.

BOND'S

PARTS FOR MAKING LOCOMOTIVES

G '00' Bogie Wheels, 13 mm. diam. ..	**1/3** each
G '00' Tender Wheels, 16 mm. diam...	**1/3** each
G '00' Driving Wheels, 19, 22, 24, 26 mm. diam.	**1/6** each
G '0' Bogie Wheels, 21 mm. diam. ..	**2/6** each
G '0' Tender Wheels, 26 mm. diam. ..	**2/6** each
G '0' Driving Wheels, 25, 33, 36, 40, 42, 46 mm. diam.	**3/-** each

	G.	'00'	'0'	
Axles. Bogie		**7d.**	**7d.**	each
Tender		**9d.**	**10d.**	each
Driving		**1/2**	**1/3**	each
Funnels. Standard types ..		**1/-**	**1/6**	each
Domes. Standard types ..		**9½d.**	**1/9**	each
Safety Valves G.W.R.		**9½d.**	**2/-**	each
Pop type ..		**5d.**	**5d.**	pair
Buffers. Round head		**4½d.**	**7d.**	each
Oval head		**5d.**	**9d.**	each
Tank Fillers for Side Tanks or Tender		**5d.**	**5½d.**	each
Whistles. Bell or Organ Pipe type		—	**6d.**	each
Footsteps. Loco. or Tender ..		**7d.**	**11d.**	pair
Brake Pipes		**6d.**	**10d.**	pair
Boiler Ends		**5½d.**	**1/9**	each
Handrail Knobs		**2/11**	**3/-**	doz.
Tender Axle Box and Spring ..		**5d.**	**9d.**	each
3-Link Couplings with Spring..		**8d.**	**10d.**	pair
Coupling Rod Pins. Short ..		**1½d.**	**1½d.**	each
Long ..		**2½d.**	**2½d.**	each

ALL PRICES PLUS PACKING AND POSTAGE

BOND'S O' EUSTON ROAD LTD.

357 EUSTON ROAD, LONDON N.W.1

Est. 1887 'Phone: EUSton 5441–2

The Latest Ian Allan BOOKS

• AIRCRAFT TODAY

JOHN W. R. TAYLOR, the editor, needs no introduction to *M.M.* readers and his name on this finely produced profusely illustrated book is a guarantee of satisfaction. Colour plate and full cloth binding **9/6**

• LOCOSPOTTERS' SPECIAL

G. FREEMAN ALLEN, editor of "Trains Illustrated," has compiled this "Special" which will undoubtedly be a winner with all loco-spotters and enthusiasts. Over 40 handsome illustrations. Coloured stiff cover.....**5/-**

• TRAINS ANNUAL 1955

CECIL J. ALLEN edits, as usual, this book for 1955; it is bigger and better than ever before. Three double spread colour plates—**of which plywood jig-saws are now available at 6/5 each**—varied articles and many, many illustrations.....**9/6**

• TRAINS DIARY 1955

It's better than ever this year; 24 pages of useful railway data as well as all the usual diary matter. Six illustrations. Covers in "plexide" in a choice of four regional colours.....**3/1**

• MEN OF THE FOOTPLATE

P. RANSOME WALLIS interviews main line drivers from each of the principal regions and tells their story in word and picture.....**10/6**

• THOSE WERE THE TRAINS

H. GORDON TIDEY, whose pictures of pre-grouping trains appear exclusively in this book, is, perhaps, the most renowned of pre-1922 railway photographers. This is a book for the nostalgic! Full cloth binding, art paper throughout.....**7/6**

In Course of Production

• THE LANCASHIRE & YORKSHIRE RAILWAY IN THE TWENTIETH CENTURY

ERIC MASON is an ex L. & Y. man and his book, which is profusely illustrated, is a worthy addition to the Ian Allan series of "connoisseur" railway books. To L. & Y. enthusiasts, past and present, this book is indubitably a *necessity*.....**25/-**

Obtainable from all Good Booksellers and Bookstalls or direct from

LOCOMOTIVE PUBLICATIONS
32 RAILWAY APPROACH
LONDON BRIDGE STATION, S.E.1

EVERYTHING RUNS SMOOTHER ON PECO SPOKED NYLON WHEELS!

16.5 mm. Gauge 00. 12 mm. dia.

Fit a set into your new wagon and see for yourself how much smoother and quieter it runs. These wheels are unbreakable, provide full insulation for 2 rail systems, have perfect profile and pointed axles. Two standards A/HD for Scale and Hornby Dublo, R/T for Trix and Triang.

ONLY 1/4 per set

Send 1/6 now for Fully Illustrated Catalogue of Peco Products for Small Scale Model Railways.

THE PRITCHARD PATENT PRODUCT CO. LTD.
PECOWAY, STATION ROAD, SEATON, DEVON

ACCURATE
HARDHITTING

Webley AIR PISTOLS

AIR RIFLES · ACCESSORIES
Write for catalogue **WEBLEY & SCOTT Ltd.**
87 WEAMAN ST., BIRMINGHAM 4, ENGLAND

RAILWAY ACCESSORIES

'OO' SCALE — HAND FINISHED

COAL OFFICE	4/-
RAILWAY STAFF (set of 5)	2/-
PASSENGERS (set of 5)	2/-
DOUBLE STATION SEAT (set of 2)	2/-
SEATED PASSENGERS. (set of 5)	2/-
WOODSIDE STATION (29½ in. long)	28/-
WOODSIDE ISLAND PLATFORM	24/-
A.A. BOX WITH PATROLMAN	2/6
TRACK SIGNS (set of 3)	2/-
ESSO OIL DRUMS (set of 3)	1/3
PLATFORM ACCESSORIES (set of 7)	2/-

Send 2/6 for sample box of 6 different models and lists of over 150 other models. Lists only 5d. Many new models.

HANNANT'S
56 London Rd. Nth., Lowestoft, Suffolk

REAL MOVIE SHOWS AT HOME!

with the PEAK 16 mm. CINE PROJECTOR

Two projectors in one — movie and still. Easy to operate. No technical knowledge required.

A STURDY machine at an
AMAZINGLY LOW PRICE.

Projector can be operated from any 4.5 volt battery or from mains THROUGH TRANSFORMER.

BUILD UP A COMPLETE SHOW!

Extra FILMETTE LOOPS

Black and White 1/- each **Colour** 1/6 each

Completely safe—non-inflammable film.

ZOO, CIRCUS, CHARLIE CHAPLIN, COMEDIES, SPORT, CORONATION, PAGEANTRY, WESTERNS, ETC.

ALSO

8 ft. "FILMETTES"!!

30 Black and White Titles... 4/- each
15 Colour Titles..... 6/- each
Assorted Titles.

Wonderful Home Entertainment!

THE ONLY 16 mm. FILM PROJECTOR of its kind FROM TOY SHOPS, HOBBY SHOPS & STORES

or write for name of nearest stockist to Sole World Distributors:

J. S. FRIEZE & CO. LTD., 37 Devonshire St., London W.1. Welbeck 2994 (3 lines)

THE BACK NUMBER SPECIALISTS CAN HELP YOU

Meccano Magazines	each
Before 1939	**1/-**
1939–1943	**9d.**
1944–1949	**6d.**
1950–1952	**9d.**
1953–Date	**1/-**
Model Railway News ..	Any
Model Railway Constructors	**6d.**
Model Engineers ..	each
Railways	each
Railway World	**1/-**
Railway Magazines	**2/-**
Trains Illustrated	**1/6**
Every Spotters' Weekly ..	**6d.**
Railway Modellers	**1/-**
Glossy P.C.s of Buses, Trams and Locos.	**6d.**
Cigarette Cards, 50 for **1/-** or sets	**1/6**

Write or call.

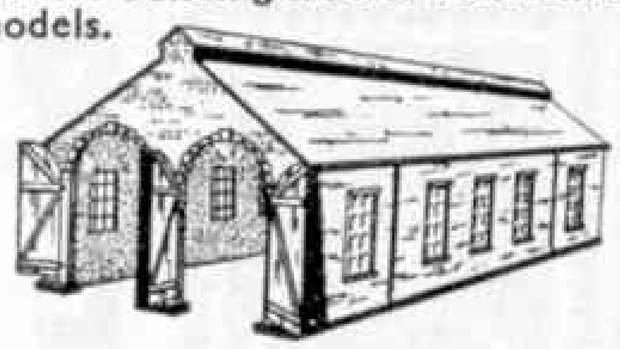
LENS OF SUTTON

50 Carshalton Road, Sutton, Surrey

"00" LINESIDE BUILDINGS FOR YOUR DUBLO LAYOUT

"ANORMA" models supply the last word in realism, and no Hornby-Dublo layout is complete without models from this extensive range.

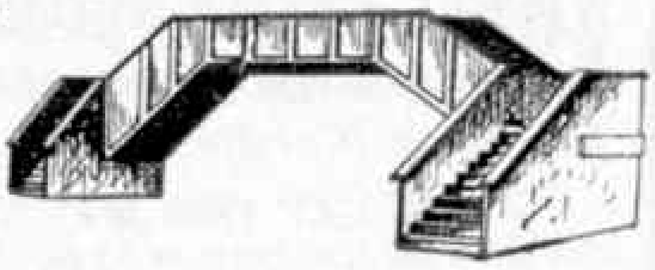
The models illustrated are but two of the 46 different Kits for building true-to-scale Lineside and Architectural models.



LOCO SHED 7/2

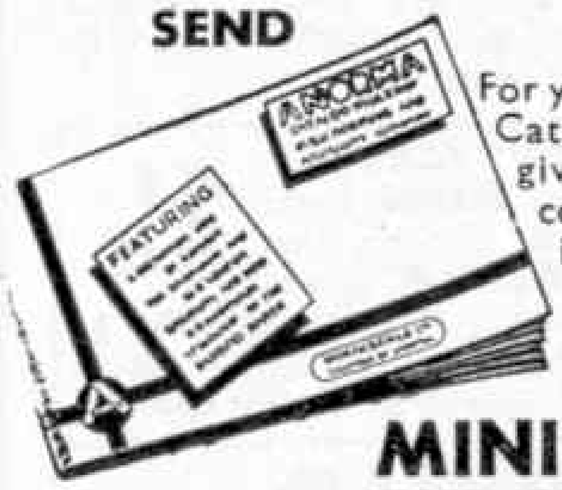
BE SURE YOU BUY "ANORMA" KITS

"ANORMA" ARE QUALITY KITS



A 36. FOOTBRIDGE 'B' 2/8

SEND NOW!



For your copy of the "Anorma" Catalogue/Handbook which gives full details of the complete range and also includes instructive illustrated articles on '00' Architectural modelling. **PRICE 1/8** (post free).

MINIKSCALE LTD.

1 CLIFTON STREET, LIVERPOOL 19

STAMP ADVERTISEMENTS

(see also pages 554 and 556)

with
10 other stamps.
Just send 2½d.
postage and ask to see
Special **"MERCURY"** Approvals.

Philip J. Dyke. 35 Buckleigh Ave., London S.W.20

FREE 50 different incl. pictorials. Send 2½d. for bargain discount approvals incl. pictorials at ½d. each.
G. M. WALKER, 13 BROOM ROAD, HALE, CHESHIRE

FREE 3 Japanese Airmail, catalogued 2/- and Q.E. mint Seychelles, request bargain approvals.
ALLCOCK, 74 TYNYPARC ROAD, RHIWBINA, CARDIFF

FREE! 20 Mint (over 30 years old, C.V. £1). Request Approvals (2½d.) **G. BARNETT (M), LIMINGTON, YEOVIL**

"XMAS AHEAD"

WHAT COULD BE NICER THAN A NICE LOT OF MY FINE STAMPS FOR A CHRISTMAS PRESENT?
G. LAWTHER, 124 GRAND PARADE, BELFAST

HAVE YOU AN ARCTIC (GREENLAND) STAMP?

★ **FREE** ★

Here are three different

The most Northerly stamps issued

TO GET THIS GIFT YOU MUST
ASK to see our famous Approval sheets, and send a 2½d. stamp for postage, and DON'T FORGET CHILDREN (if under 16 years' old), TO TELL YOUR PARENTS. The gift is ONLY sent with Approvals.

MONSTER "BARGAIN" PARCEL
Contains **200 different stamps** from many countries, a loose leaf **"ELIZABETHAN ALBUM"** (will hold 1,500 stamps), and a **"Stamp Collector's Encyclopædia,"** 26 pages, full of information for every philatelist. DON'T MISS THIS OFFER! **3/6**

HARRY BURGESS & CO.
(Dept. MM10, PEMBURY, KENT

CIGARETTE CARDS

ALBUMS to hold 200 cards **2/3½**.
100 different cards **2/9 post free.**

WE OFFER COMPLETE SETS IN CLEAN CONDITION.

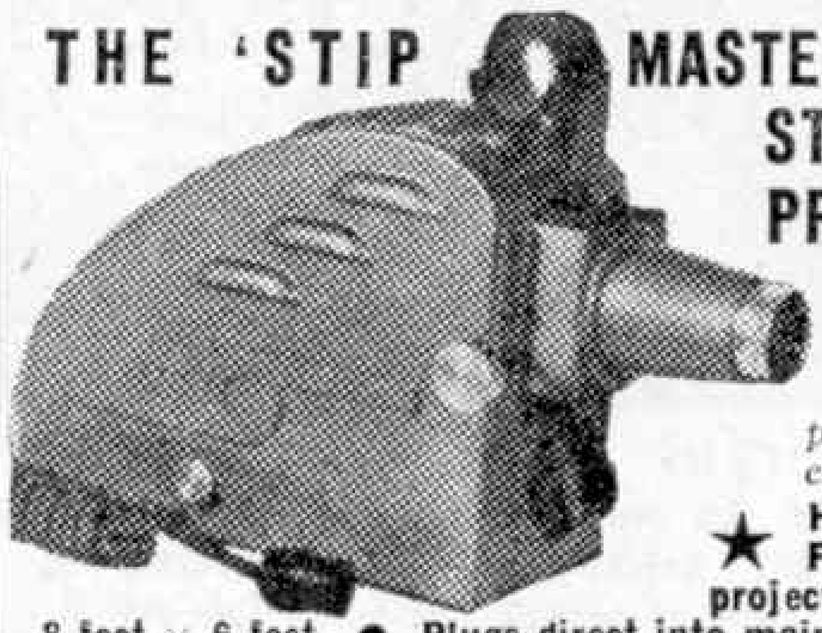
Aeroplanes	**2/6**	Footballers	**2/-**
Boxing	**2/-**	Motor Cars	**1/6**
Butterflies	**2/-**	Navy	**2/6**
Cricketers	**2/6**	Soldiers	**2/6**
Fishes	**2/6**	Ships	**2/6**
Flowers	**2/6**	Railway Equip.	**2/6**

MATCHBOX LABELS

Offered in World Packets.
30 different **2/6**; 60, **5/-**; 120, **10/-**; 240. **£1**; 360, **£1/10/-**; 480, **£2**; or by **Individual Country Packets**
25 different Austria **3/-**; Belgium **2/6**; Czech **3/-**; Germany **2/6**; India **2/-**; Italy **3/-**; Japan **4/-**; Sweden **3/-**. 50 of any country twice the price of 25.

E.H.W. LTD. (Dept. "M"),
12 Sicilian Avenue, London W.C.1

THE 'STIP MASTER' 35 mm. STRIP FILM PROJECTOR



55/-

post & pkg. 2/- extra or C.O.D.

★ **High Quality Focusing Lens, projects picture up to 8 feet × 6 feet.** ● **Plugs direct into mains.** ● **Finished Gold and Silver.** ● **Complete with Film.** ● Magnificent film and colour film of Entire Coronation, **7/6** extra. Huge List of films from **1/-** to **3/6** enclosed with projector.
FOWDEN FILM & OPTICAL SERVICE, 2 Hastings St., Luton

By a Favourite Author

At the "WHITE WOLF"

By MICHAEL D. GIBSON

The "White Wolf" was an inn on the Cornish coast, and this is a stirring tale of adventure and mystery over 100 years ago. Colour frontispiece.

Crown Library. *From any Bookseller.* **7s. net.**

WARNE, LONDON, W.C.2

Send a 3d. stamp for our new list of
LINCRAFT de LUXE 1/72 SCALE SOLID MODEL AIRCRAFT KITS
which include all the latest jets and 1914-1918 aircraft. Complete in every detail. Nothing more to buy when you have a LINCRAFT kit.

WILMSLOW MODEL CO.
Water Lane, WILMSLOW, Cheshire

Crystal Set Kits 17/6 Complete with instructions. Endless entertainment. Ideal for School or College. Lightweight Headphones **15/11**, post free. Overseas enquiries invited.
W. Buckle (Dept. M), 77 Horringer Rd., Bury St. Edmunds

A CAREER AT SEA

His training over at

THE PRINCE OF WALES SEA TRAINING SCHOOL

he begins life in the Deck Dept. of the Merchant Navy.

If your ambition is to be a sailor, an intensive training course of four months duration at one of the finest establishments of its kind in the United Kingdom will equip you with the knowledge and opportunity to fulfil that ambition.

Free training for sons of seamen

Enquiries from applicants between the ages of 15 years 8 months and 16 should be addressed:

General Secretary:
BRITISH SAILORS' SOCIETY
680 Commercial Rd., London E.14. (Tel. East 4191)

H.A.C. SHORT WAVE EQUIPMENT

Noted for over 18 years for . . .
S.W. Receivers and Kits of Quality.

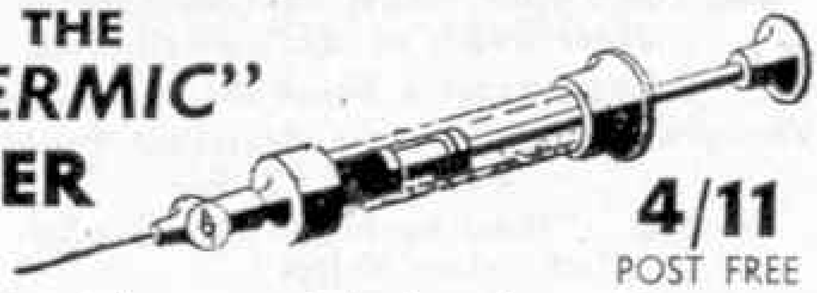
Improved designs with Denco coils:
One-Valve Kit, Model "C" ..... Price 25/-
Two-Valve Kit, Model "E" ..... Price 50/-

All kits complete with all components, accessories, and full instructions. Before ordering call and inspect a demonstration receiver, or send stamped, addressed envelope for descriptive catalogue.

"H.A.C." SHORT-WAVE PRODUCTS
(Dept. M.M.), 11 Old Bond Street, London W.1

FOR PERFECT LUBRICATION

THE "DERMIC" OILER



4/11
POST FREE

Manufactured by us specially for clean and accurate lubrication. If you own a Model Railway or Meccano Set the "DERMIC" will be invaluable. Packed in carton with full instructions.

GET ONE FROM YOUR LOCAL DEALER
or send direct to:

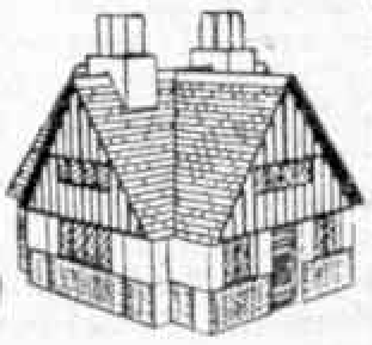
S. & B. PRODUCTIONS
Portland Rd., S. Norwood, London S.E.25

Experiment at home...

WITH A LOTT'S CHEMISTRY SET

★ **Complete with chemicals and apparatus.**
★ **Spares easily obtainable.**
★ **Instruction book with each set, describing lots of harmless and fascinating experiments.**
★ **Sets from 12/3 per box.**

Build real-life models with



LOTT'S TOY STONE BUILDING BRICKS

Each box complete with coloured plans and instructions. Sets to suit all ages —from 6/11 per box.

Ask to see them at your toy dealers, or write for price list, enclosing 1½d. stamped addressed envelope.

LOTT'S BRICKS LTD
DEPT. M.M.15 WATFORD HERTS

ARE YOU INTERESTED IN RADIO?

Then build the amazing D.5.B. One Valve Receiver, ranges the Continent on a 22 volt battery, simple to build with our easy-to-follow diagrams. Highly instructive for the beginner in radio, will work anywhere with a short aerial and earth. Ideal for undisturbed listening, receives Luxembourg, Dutch, French, Italian, German and many other foreign stations. Fully detailed instructions and parts list sent for 1/6d. plus 1½d. stamp. Send to:

OCEAN RADIO (Dept. M/M)
HIGH STREET, LUTTERWORTH, LEICS.

STUDY AT HOME FOR A DEGREE

Wolsey Hall (est. 1894) can prepare you by post for all G.C.E. exams.; London Univ. B.A., B.Sc., and many other exams. Moderate fees, instalments. Write for Prospectus to C. D. Parker, M.A., LL.D.,

Dept. GK92, WOLSEY HALL, OXFORD

SHORTHAND in 1 Week. Test lesson 2½d. stamp. **Duttons (MO/SV), 93 Gt. Russell Street, W.C.1**

READERS' SALES AND WANTS

SALES

New unused Universal Machine Tool, complete all Accessories. Circular Fret Saw Blades, Grinder, Chuck, etc. 2 Speed Motor, 200/250–5A. For Metal, Wood, and Plastic working. Bargain, £15.—Box "M.M." No. 87.

"M.M.s" March 1945 to January 1949 complete. Good condition. Offers.—A. Skelton, 40 Tollgate Avenue, Redhill, Surrey.

45 "M.M.s"—3d., 4d. each. June 1947–March 1951 inclusive. Good condition.—A. Cross, 75 Seaton Crescent, Aspley, Nottingham.

"M.M.s" June 1943 to December 1947 (August 1946 and June 1947 missing). Offers to—I. Pitt, 115 Charlton Road, Kenton, Middx.

Exley Buffet Car, damaged buffer but otherwise very good condition. Bogies and Couplings separate. £2 or nearest offer.—Gaudoin, 63 Mundesley Road, North Walsham, Norfolk.

"M.M.s" August 1950–July 1954. In perfect condition. Offers.—K. Langton, High Street, Rocester, Staffs.

Complete Graham Farish Goods Set (originally £8), hardly used and in perfect condition. What offers?—G. Pensotti, "Wealdens," Denman's Close, Lindfield, Sussex.

Bound "M.M.s" 1924–26 complete. Covers faded, otherwise excellent condition. Offers.—Weight, 7 Sandhurst Grove, Coventry.

"M.M.s" 6d. each for 1950, 1951, January–July and November–December 1952, January, March–December 1953, January–November 1954. Apply—Alan Rennie, 37 Greenhill Avenue, Giffnock, Glasgow. Post 1/–, sent C.O.D.

"Trains Illustrated" January 1952–February 1954 (December 1953 missing), 9d. each. Send S.A.E.—Jones, 94 Elm Grove, Orpington, Kent.

0 Gauge Clockwork and Electric Track, Rolling Stock including Bogie Coaches also Bassett-Lowke Compound and other large Locomotives in S.R., G.W.R. and L.M.S. livery. S.A.E. list.—22 Carlton Road, Malvern.

S.E.L. No. 2 Microscope, good condition, 19/–. Also "M.M.s" January 1943–September 1954 (1948 home bound), good condition, £2/5/–.—Slotkin, 158 Micklefield Road, High Wycombe, Bucks.

MECCANO MAGAZINE

Registered at the G.P.O., London, for transmission by Canadian Magazine Post.

EDITORIAL AND ADVERTISING OFFICES:
LIVERPOOL 13, ENGLAND.
Telegrams: "Meccano, Liverpool."

Readers' Sales and Wants. Private advertisements (i.e., not trade) are charged 1d. per word, minimum 1/–. Cash with order. Readers' advertisements are published as soon as possible; inclusion in the first issue after receiving them cannot be guaranteed. Advertisements of goods currently manufactured by Meccano Ltd. cannot be accepted.

Bayko good condition, Set No. 2, price 24/–.—J. Carter, 1 Police Houses, Park Road, Faringdon, Berks.

Geared Roller Bearing complete, in new condition. Price £4/4/–.—158, Hall Lane, Walton-on-the-Naze, Essex.

No. 4 Minibrix Set with over 200 extras; good condition, 3 gns.—o.n.o.—Whit:, 8 Tennyson Road, Bournemouth, Hants.

"M.M.s" and quantity of Hornby 0 Gauge Electric equipment. S.A.E. for list.—26 Ryecroft Avenue, Whitton, Middlesex.

WANTS

In good condition—"Hornby Book of Trains" 1937/38 and 1938/9 Editions, for overseas reader. State price to—Moss, 163 Stonor Road, Hall Green, Birmingham 28.

Collections and accumulations of Bus and Tram Tickets especially from Birmingham, Sunderland, Manchester and York areas.—Meakin, Andressey Hospital, Burton-on-Trent, Staffs.

Two Roller Races 192 Teeth, or Geared Roller Bearing, Manual 4–7, Book of New Models, How to Use Meccano Parts.—Box MM No. 86.

Two Bogie Coaches in good condition, Gauge 0. State price and details.—Hartley, 84 Macclesfield Road, Buxton, Derbys.

Bayko in sets or odd parts. Name condition and price to—P. Westbrook, 43 Oban Road, Barking, Essex.

Pre-1927 Instruction Manuals: 0 or 1–3 and 4–7. Please state year and price to—Mrs. Dyball, "St. Anthony," 23 Millfield, Folkestone.

Meccano No. 2 Clockwork reversible Motors, would like two or more, any condition, will buy anywhere and from separate sellers. State price, condition and expected cost of postage; if satisfactory I will write airmail sending Money Order including postage cost.—Malcolm Booker, 68 Greenwich Road, Greenwich, Sydney, N.S.W., Australia.

GO 6 ft. x 4 ft.
and Make your Model Railroading FUN with
JENNINGS of BEXLEYHEATH.
6D. Comprehensive Brochure in Colour. **6D.**
We are famous for our Precision Swiss Gears.
Packet of 12, 6/–
Booklet "How to Make your Model Railroading FUN!" **6D.**
Jennings' '3R' Point Lever for use with Wrenn Universal Points, with OMEGA loop and screws, **1/9**
All Agencies, Main Stockist for Wrenn Track.
Send today—Goods Arrive 3rd day—Service plus.
W. J. & H. G. JENNINGS LTD.
114/116 Broadway, Bexleyheath, Kent
Tel. 111 & 7834 Established over 45 years

Realistic . . .

reliable . . .

NEW

This fine model of a B.R. Standard 2-6-4 Tank Locomotive is the latest Hornby-Dublo introduction. It reproduces all the essential details of the prototype, down to the Walschaerts valve gear.

Write for a folder illustrating in full colour the complete range of Hornby-Dublo electric trains and accessories.

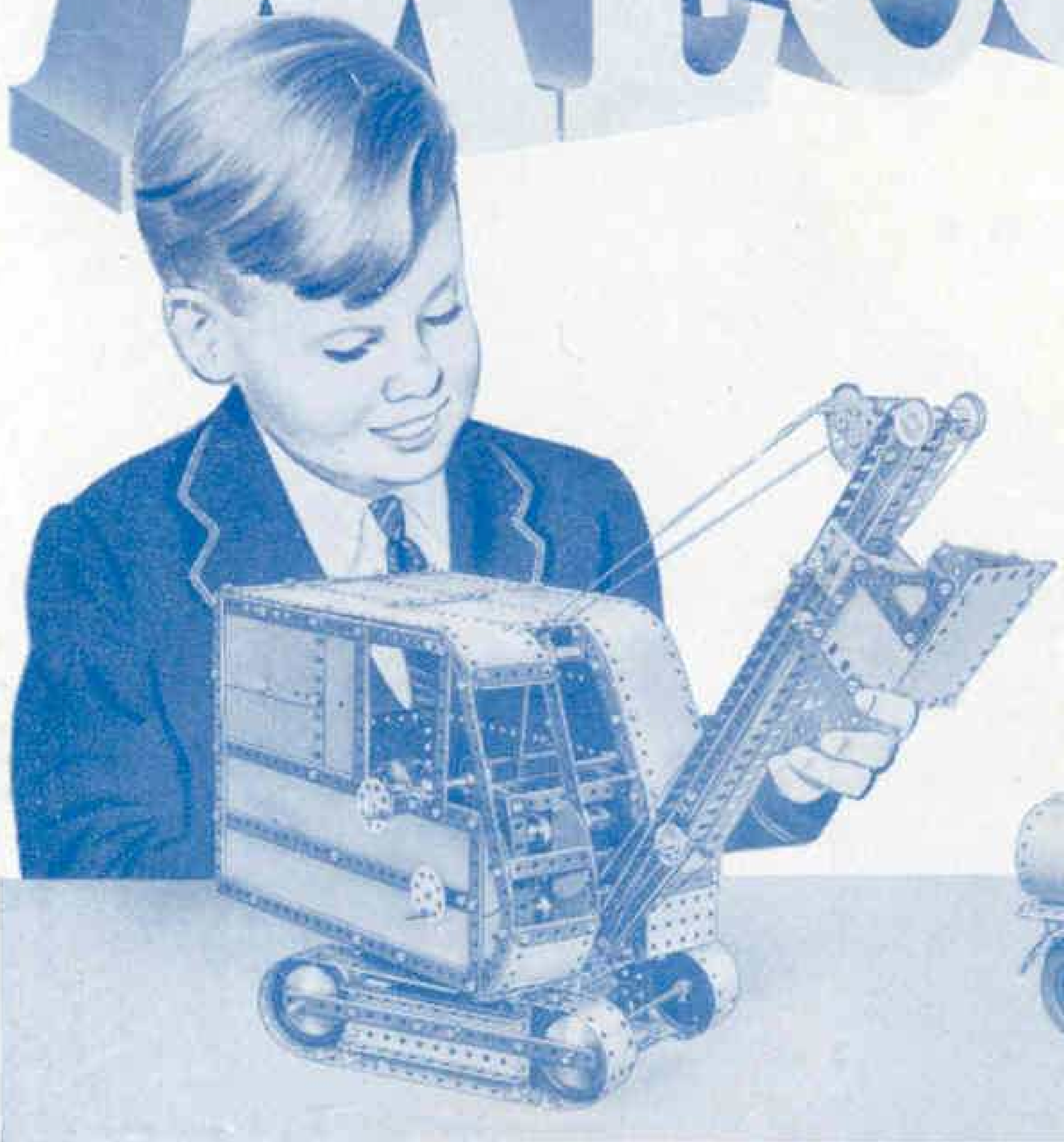
- ★ A complete Railway on the Table
- ★ Mains or Battery Operated
- ★ British Railways Livery
- ★ All-metal Construction
- ★ Powerful Locomotives
- ★ Fitted with Suppressors
- ★ Automatic Couplings
- ★ British and Guaranteed
- ★ Safe and Reliable

HORNBY DUBLO

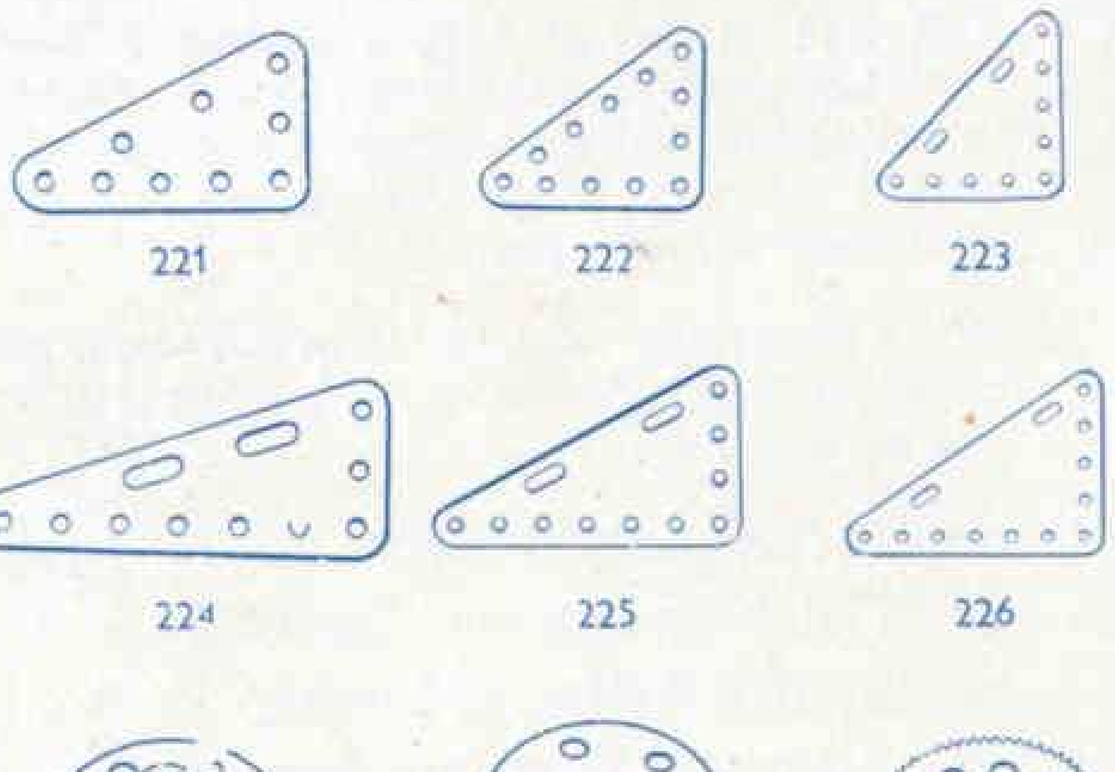
ELECTRIC TRAINS

MADE AND GUARANTEED BY MECCANO LTD.
BINNS ROAD, LIVERPOOL 13

MECCANO



NEW PARTS
•
BETTER MODELS
•
IMPROVED OUTFITS



Meccano in 1954 is better than ever, with new parts introduced into the system, improved Outfits, and Books of Instructions that have been revised and enlarged to include many attractive up-to-date models. Now, a new low-priced Outfit has been added to the range — the No. 00, price 5/6d. (inc. Tax).

•

The Plates, Gears and other parts illustrated here are entirely new and valuable additions to the Meccano range.

MECCANO LTD., LIVERPOOL

PUBLISHED BY MECCANO LTD., BINNS ROAD, LIVERPOOL 13, ENGLAND.
Printed by John Waddington, Ltd., Leeds and London